

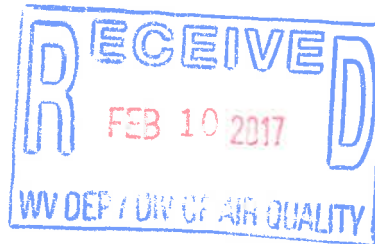
# ***P & A Engineering and Consultants, Inc.***

312 Justice Avenue  
Logan, WV 25601

Phone (304) 752-8320  
Fax (304) 752-7488

February 3, 2017

Mr. William F. Durham, Director  
Division of Air Quality  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304



RE: Kanawha Eagle Mining LLC  
General Permit Modification  
ID#039-00480

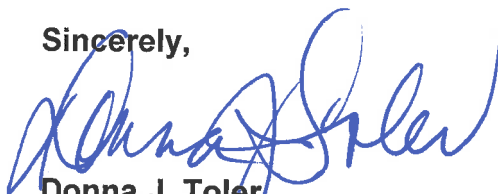
Dear Mr. Durham:

On behalf of Kanawha Eagle Mining, LLC, we are re-submitting the enclosed General Permit Modification Application for the South Hollow Preparation Plant Facility for your review and approval. Please apply monies being held from the recent withdrawal to this submittal.

The application addresses changes in the process flow, controls, and additional deep mine belts, refuse belts, equipment identifications, feeder breaker, delete truck dump bins and eight screens as well as adding a press and frame system for the refuse. Reviewer concerns have been addressed in this re-submittal.

If additional information or clarification is needed, please contact me at the Logan address listed above or call 304-752-8320.

Sincerely,



Donna J. Toler  
Air Quality Project Manager

[donnatoler@suddenlink.net](mailto:donnatoler@suddenlink.net)

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WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
DIVISION OF AIR QUALITY  
601 - 57<sup>th</sup> Street SE  
Charleston, WV 25304  
Phone: (304) 926-0475 • [www.wvdep.org](http://www.wvdep.org)

## APPLICATION FOR GENERAL PERMIT REGISTRATION

CONSTRUCT, MODIFY, RELOCATE OR  
ADMINISTRATIVELY UPDATE  
A STATIONARY SOURCE OF AIR POLLUTANTS

PLEASE CHECK ALL THAT APPLY (IF KNOWN):

- ☐ CONSTRUCTION ☒ MODIFICATION ☐ RELOCATION  
☐ ADMINISTRATIVE UPDATE ☐ AFTER-THE-FACT

FOR AGENCY USE ONLY: PLANT I.D. # \_\_\_\_\_

PERMIT # \_\_\_\_\_ PERMIT WRITER: \_\_\_\_\_

### CHECK WHICH TYPE OF GENERAL PERMIT REGISTRATION YOU ARE APPLYING FOR:

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> <b>G10-C</b> – Coal Preparation and Handling                        | <input type="checkbox"/> <b>G40-C</b> – Nonmetallic Minerals Processing |
| <input type="checkbox"/> <b>G20-B</b> – Hot Mix Asphalt   | <input type="checkbox"/> <b>G50-B</b> – Concrete Batch                  |
| <input type="checkbox"/> <b>G30-D</b> – Natural Gas Compressor Stations                                 | <input type="checkbox"/> <b>G60-C</b> – Class II Emergency Generator    |
| <input type="checkbox"/> <b>G33-A</b> – Class I Spark Ignition Internal Combustion Engine               | <input type="checkbox"/> <b>G65-C</b> – Class I Emergency Generator     |
| <input type="checkbox"/> <b>G35-A</b> – Natural Gas Compressor Stations (Flare/Glycol Dehydration Unit) |   |

### SECTION I. GENERAL INFORMATION

1. NAME OF APPLICANT (AS REGISTERED WITH THE WV SECRETARY OF STATE'S OFFICE):

**KANAWHA EAGLE MINING, LLC**

2. FEDERAL EMPLOYER ID NO. (FEIN):

**54-1930908**

3. APPLICANT'S MAILING ADDRESS:

**3228 SUMMIT SQUARE PLACE SUITE 180  
LEXINGTON, KY 40509-2637**

4. IF APPLICANT IS A SUBSIDIARY CORPORATION, PLEASE PROVIDE THE NAME OF PARENT CORPORATION:

**BLACKHAWK MINING**

5. **WV BUSINESS REGISTRATION.** IS THE APPLICANT A RESIDENT OF THE STATE OF WEST VIRGINIA? ☒ YES ☐ NO

⇒ IF YES, PROVIDE A COPY OF THE CERTIFICATE OF INCORPORATION / ORGANIZATION / LIMITED PARTNERSHIP (ONE PAGE) INCLUDING ANY NAME CHANGE AMENDMENTS OR OTHER **BUSINESS CERTIFICATE** AS ATTACHMENT A.

⇒ IF NO, PROVIDE A COPY OF THE CERTIFICATE OF AUTHORITY / AUTHORITY OF L.L.C. / REGISTRATION (ONE PAGE) INCLUDING ANY NAME CHANGE AMENDMENTS OR OTHER **BUSINESS CERTIFICATE** AS ATTACHMENT A.

### SECTION II. FACILITY INFORMATION

7. TYPE OF PLANT OR FACILITY (STATIONARY SOURCE) TO BE CONSTRUCTED, MODIFIED, RELOCATED OR ADMINISTRATIVELY UPDATED (E.G., COAL PREPARATION PLANT, PRIMARY CRUSHER, ETC.):

**Adding deep mine belts, adding 11 refuse belts, delete 2 truck dump bins, add breaker, delete 8 screens, change equipment identifications, controls, transfer points and add generators. Add refuse press and frame system. Resubmittal.**

8. STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODE FOR THE FACILITY:

**1221 AND 1222**

9A. DAQ PLANT I.D. NO. (FOR AN EXISTING FACILITY):  <b>039-00480</b>	10A. LIST ALL CURRENT 45CSR13 AND 45CSR30 (TITLE V) PERMIT NUMBERS ASSOCIATED WITH THIS PROCESS (FOR EXISTING FACILITY ONLY):  <b>G10-D017</b>
--	--

**PRIMARY OPERATING SITE INFORMATION**

11A. NAME OF PRIMARY OPERATING SITE:  <b>South Hollow Preparation Plant</b>	12A. MAILING ADDRESS OF PRIMARY OPERATING SITE:  <b>PO Box 100, Winifrede, WV 25214</b>	
13A. DOES THE APPLICANT OWN, LEASE, HAVE AN OPTION TO BUY, OR OTHERWISE HAVE CONTROL OF THE <i>PROPOSED SITE</i> ? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO ⇒ IF YES, PLEASE EXPLAIN: <b>OWNER/OPERATOR</b>  ⇒ IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.		
14A. ⇒ FOR <b>MODIFICATIONS</b> or <b>ADMINISTRATIVE UPDATES</b> , AT AN EXISTING FACILITY, PLEASE PROVIDE DIRECTIONS TO THE <i>PRESENT LOCATION</i> OF THE FACILITY FROM THE NEAREST STATE ROAD; ⇒ FOR <b>CONSTRUCTION OR RELOCATION PERMITS</b> , PLEASE PROVIDE DIRECTIONS TO <i>THE PROPOSED NEW SITE LOCATION</i> FROM THE NEAREST STATE ROAD. <b><u>From Charleston, follow Route 61 through Chesapeake, WV – turn right onto Winifrede Hollow road, proceed straight approximately 5 miles to plant site</u></b>		
<hr/> <p>INCLUDE A MAP AS ATTACHMENT F.</p>		
15A. NEAREST CITY OR TOWN:  <b>Chesapeake</b>	16A. COUNTY:  <b>Kanawha</b>	
17A. UTM NORTHING (KM):  <b>4223.28461</b>	18A. UTM EASTING (KM):  <b>450.97763</b>	19A. UTM ZONE:  <b>17</b>

**Coordinates: 38-09-22.02 N and 81-33-34.36W sits on top plant**

**1<sup>ST</sup> ALTERNATE OPERATING SITE INFORMATION (G20-B, G40-C, G50-C only)**

11B. NAME OF PRIMARY OPERATING SITE:  _____  _____		12B. MAILING ADDRESS OF PRIMARY OPERATING SITE:  _____  _____	
13B. DOES THE APPLICANT OWN, LEASE, HAVE AN OPTION TO BUY, OR OTHERWISE HAVE CONTROL OF THE <i>PROPOSED SITE</i> ? <input type="checkbox"/> YES <input type="checkbox"/> NO ⇒ IF YES, PLEASE EXPLAIN: _____ _____			
⇒ IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.			
14B. ⇒ FOR <b>MODIFICATIONS</b> or <b>ADMINISTRATIVE UPDATES</b> , AT AN EXISTING FACILITY, PLEASE PROVIDE DIRECTIONS TO THE <i>PRESENT LOCATION</i> OF THE FACILITY FROM THE NEAREST STATE ROAD; ⇒ FOR <b>CONSTRUCTION OR RELOCATION PERMITS</b> , PLEASE PROVIDE DIRECTIONS TO <i>THE PROPOSED NEW SITE LOCATION</i> FROM THE NEAREST STATE ROAD.  _____  _____  _____			
INCLUDE A MAP AS ATTACHMENT F.			
15B. NEAREST CITY OR TOWN:		16B. COUNTY:	
17B. UTM NORTHING (KM):		18B. UTM EASTING (KM):	19B. UTM ZONE:

**2<sup>ND</sup> ALTERNATE OPERATING SITE INFORMATION (G20-B, G40-C, G50-C only)**

11C. NAME OF PRIMARY OPERATING SITE:  	12C. MAILING ADDRESS OF PRIMARY OPERATING SITE:  	
13C. DOES THE APPLICANT OWN, LEASE, HAVE AN OPTION TO BUY, OR OTHERWISE HAVE CONTROL OF THE <i>PROPOSED SITE</i> ? <input type="checkbox"/> YES <input type="checkbox"/> NO ⇨ IF YES, PLEASE EXPLAIN: _____  ⇨ IF NO, YOU ARE NOT ELIGIBLE FOR A PERMIT FOR THIS SOURCE.		
14C. ⇨ FOR <b>MODIFICATIONS</b> or <b>ADMINISTRATIVE UPDATES</b> , AT AN EXISTING FACILITY, PLEASE PROVIDE DIRECTIONS TO THE <i>PRESENT LOCATION</i> OF THE FACILITY FROM THE NEAREST STATE ROAD; ⇨ FOR <b>CONSTRUCTION OR RELOCATION PERMITS</b> , PLEASE PROVIDE DIRECTIONS TO <i>THE PROPOSED NEW SITE LOCATION</i> FROM THE NEAREST STATE ROAD.    INCLUDE A MAP AS ATTACHMENT F.		
15C. NEAREST CITY OR TOWN:	16C. COUNTY:	
17C. UTM NORTHING (KM):	18C. UTM EASTING (KM):	19C. UTM ZONE:
20. PROVIDE THE DATE OF ANTICIPATED INSTALLATION OR CHANGE: <b>Upon Permit Approval</b>  ⇨ IF THIS IS AN <b>AFTER-THE-FACT</b> PERMIT APPLICATION, PROVIDE THE DATE UPON WHICH THE PROPOSED CHANGE DID HAPPEN: ____/____/____		21. DATE OF ANTICIPATED START- UP IF REGISTRATION IS GRANTED:  <b>Upon Permit Approval</b>
22. PROVIDE MAXIMUM PROJECTED OPERATING SCHEDULE OF ACTIVITY/ ACTIVITIES OUTLINED IN THIS APPLICATION:  HOURS PER DAY <b>24</b> DAYS PER WEEK <b>7</b> WEEKS PER YEAR <b>52</b> PERCENTAGE OF OPERATION <b>100</b>		

**WEST VIRGINIA  
STATE TAX DEPARTMENT  
BUSINESS REGISTRATION  
CERTIFICATE**

ISSUED TO:  
**KANAWHA EAGLE MINING, LLC  
3228 SUMMIT SQUARE PL 180  
LEXINGTON, KY 40509-2637**

**BUSINESS REGISTRATION ACCOUNT NUMBER: 2319-5086**

This certificate is issued on: **08/11/2015**

*This certificate is issued by  
the West Virginia State Tax Commissioner  
in accordance with Chapter 11, Article 12, of the West Virginia Code*

*The person or organization identified on this certificate is registered  
to conduct business in the State of West Virginia at the location above.*

This certificate is not transferrable and must be displayed at the location for which issued.  
This certificate shall be permanent until cessation of the business for which the certificate of registration  
was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.

Change in name or change of location shall be considered a cessation of the business and a new  
certificate shall be required.

TRAVELING/STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them.  
CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of  
this certificate displayed at every job site within West Virginia.

## DETAILED PROCESS DESCRIPTION

Raw coal from the Eagle Mine is transferred to the plant via belt BC-01(PE) @ TP-01(TC-FE) and TP-02(TC-FW). Raw coal from the Peerless Mine will transfer to stockpile OS-01(SW-WS) @ TP-03(TC-FE) and TP-04(TC-MDH); will reclaim under pile to feeder-breaker CR-01(FE) for transfer via belt BC-03(PE) to the plant feed belt BC-09(PE) @ TP-05(LO-UC) thru TP-07(TC-FE). Raw coal from the newest deep mine will transfer via a series of belt conveyors BC-04(NC) thru BC-07(NC) to the plant transfer belts BC-08(PE) and BC-09(PE) @ TP-08(TC-FE) thru TP-16(TC-FW). Stacker belt BC-05 can be used to transfer raw coal to open stockpile OS-02(SW-WS) for loadout to truck @ TP-09(TC-MDH) and TP-10(LO-MDH). This coal can be trucked to raw coal stockpile OS-03(SW-WS) @ TP-11(UL-MDH) in the event of belt system breakdown. Raw coal from BC-07 can also transfer to the raw coal stockpiles OS-03(SW-WS) and OS-04(SW-WS) via a series of belt conveyors BC-12(PE) thru BC-14(PE) @ TP-23(TC-FE) thru TP-27(TC-PE).

Raw coal entering the plant will be screened by SS-01(FW) and crushed by CR-02(FW); transferred to belts BC-10(PE) and BC-11(PE); transfer to the raw coal silos BS-01(FE), BS-02(FE) and stockpiles OS-03 and OS-04 @ TP-17(TC-FW) thru TP-22(TC-FE). From the silos and stockpiles, raw coal will reclaim under bin and under pile to belt conveyors BC-15(FE), BC-16(FE) and BC-17(PE) for transfer to plant @ TP-28(LO-UC) thru TP-34(TC-FW).

Plant stoker coal will transfer to stoker bin BS-03(FE) via belt BC-18(PE) for loadout to truck or train @ TP-35(TC-FW) thru TP-38(LO-TC).

Clean coal from the plant will transfer to the clean coal silos BS-04(FE) and BS-05(FE) via belts BC-19(PE) and BC-20(PE) @ TP-39(TC-FW) thru TP-



42(TC-FE) and reclaim under bin to belts BC-21(FE) and BC-22(FE) for transfer to loadout bin BS-06(FE) @ TP-43(LO-UC) thru TP-46(TC-FE). Clean coal can be transferred to rail or truck @ TP-47(LR-TC) and TP-48(LO-TC).

Screen SS-01 reject materials can transfer to refuse crusher CR-03(FW) and transfer to refuse belt BC-23(PE) inside the plant @ TP-49(TC-FW) and TP-50(TC-FW).

Plant refuse is transferred to the disposal area via a series of partially enclosed belt conveyors BC-23(PE) thru BC-39(PE) @ TP-51(TC-FW) thru TP-71(TC-MDH). In the event of belt malfunction or breakdown, refuse can also transfer from belt BC-23 to refuse bin BS-07(FE) for transfer to the disposal area by truck @ TP-52(TC-FE) thru TP-54(UL-MDH).

Refuse slurry material exits the plant via slurry line to the filter press building where it will be processed and transfer to the refuse disposal area via a series of refuse belts BC-40(PE) thru BC-42(PE) @ TP-72(TC-FE) thru TP-75(TC-MDH).

Refuse material will exit the plant at TP-76((TC-FW) and go to press building where it will discharge to belt conveyor BC-43(PE) @ TP-77(TC-FE) and discharge to the exiting refuse belt conveyor system at TP-78(TC-FE).

## DESCRIPTION OF FUGITIVE EMISSIONS

Potential sources of fugitive particulate emissions for this facility include emissions, which are not captured by pollution control equipment and emissions from open stockpiles and vehicular traffic on unpaved haulroads and work areas. The haulroads and work areas will be controlled by water truck in accordance with section E.6.c.i. of the General Permit.

The water truck is equipped with pumps sufficient to maintain haulroads and work areas. The water truck will be operated three times daily, and more as needed in dry periods.

An additive to prevent freezing will be utilized in the winter months when freezing conditions are present.

BC-42 (PE)  
300 TPH

TO DISPOSAL AREA



No.	Date	Revision	By	Job No.:	Date Drawn:
1				KEM-004-16	02/01/17
2				Drawn By: G C	Checked By: DJT
3				Computer No.:	Contour Interval:
4				17034	N/A
5				Scale:	Sheet No.:
6				NOT TO SCALE	1 of 1
7				SUBMITTAL DATE:  February 2017	
8					
9					

Prepared by:



**E & C ENGINEERS & CONSULTANTS**  
PO Box 470 Alum Creek, WV 25003 (304) 756-4066

**Kanawha Eagle Mining, LLC**

**South Hollow Preparation Plant**  
**Facility ID: 039-00480**

Air Quality General Permit

**Material Flow Diagram**

No.	Date	Revision	By	Job No.:	Date Drawn:
1				KEM-004-16	02/01/17
2				Drawn By: G C	Checked By: DJT
3				Computer No.:	Contour Interval:
4				17034	N/A
5				Scale:	Sheet No.:
6				NOT TO SCALE	1 of 1
7				SUBMITTAL DATE:	
8				February 2017	
9					

Prepared by:



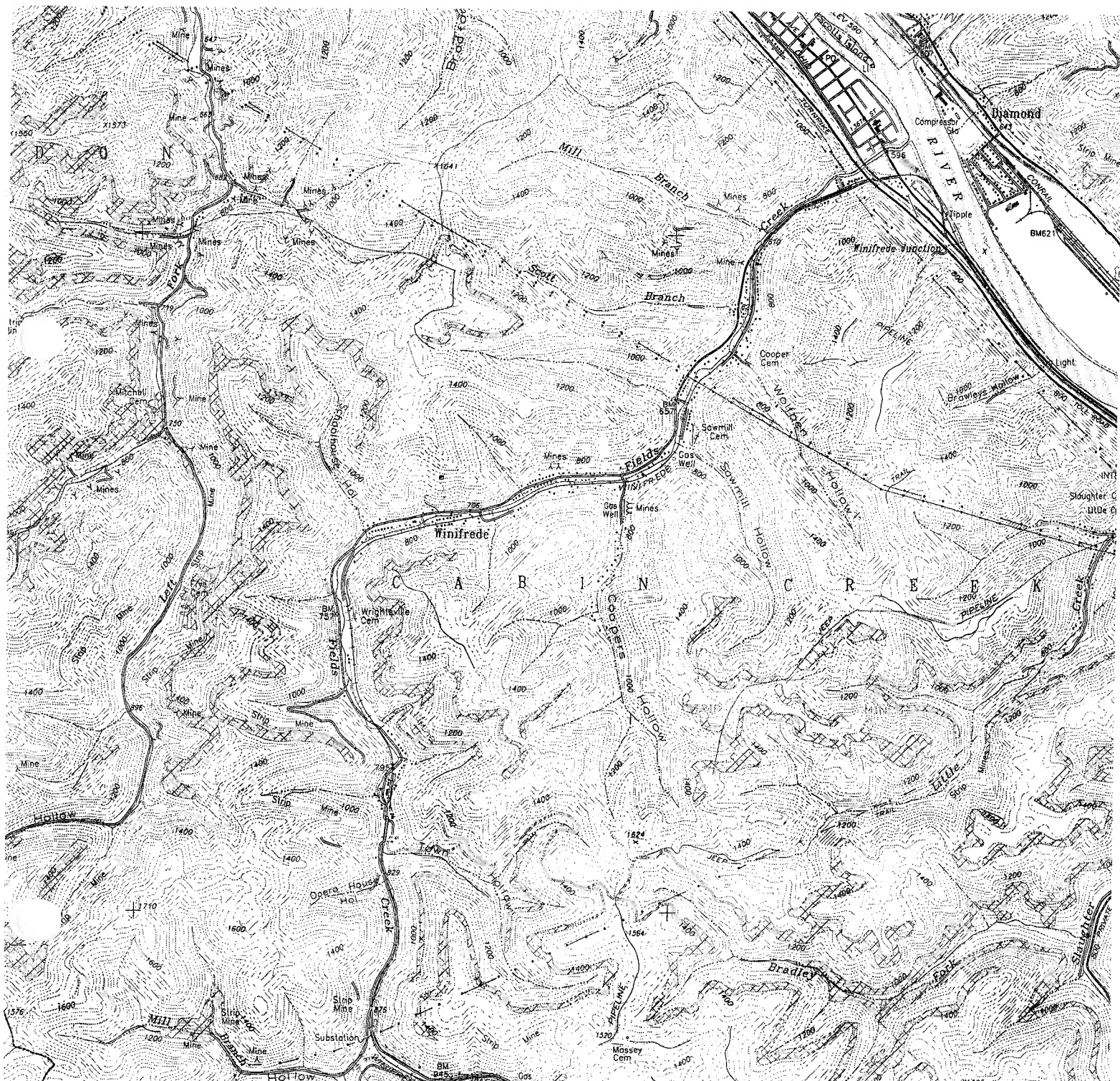
**E NGINEERS & C ONSULTANTS**  
PO Box 470 Alum Creek, WV 25003 (304) 756-4066

**Kanawha Eagle Mining, LLC**

**South Hollow Preparation Plant**  
**Facility ID: 039-00480**

Air Quality General Permit

**Site Map**



Lon/Lat

Longitude: - 81 d 33 m 34.36 s

Latitude: + 38 d 9 m 22.02 s

DD: -81 559544 38.156117

Datum: ☐ NAD27 ☒ NAD83

UTM

Coordinates: 450977.63 E 4223284.61 N

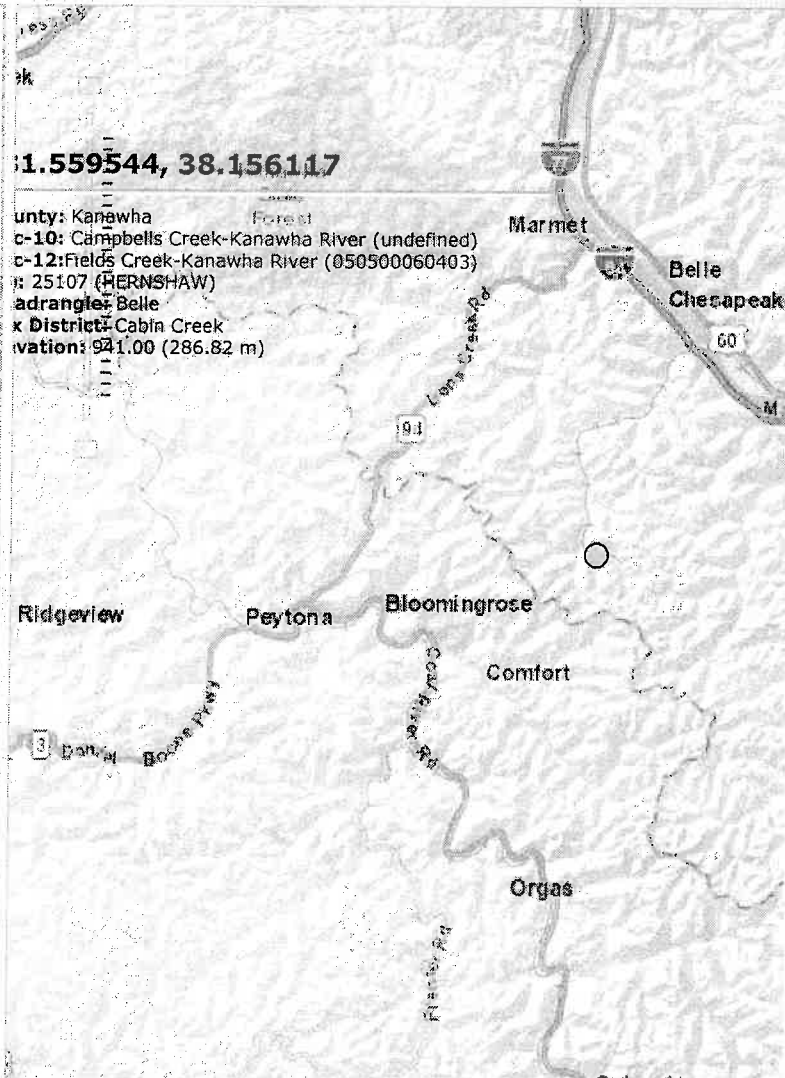
Datum: ☐ NAD27 ☒ NAD83 Zone: 17

WV State Plane (feet)

Coordinates: 1376168.69 E -118470.48 N

Datum: ☐ NAD27 ☒ NAD83 Zone: North

County: Kanawha  
c-10: Campbells Creek-Kanawha River (undefined)  
c-12: Fields Creek-Kanawha River (050500060403)  
p: 25107 (HERNSHAW)  
adrangle: Belle  
x District: Cabin Creek  
levation: 911.00 (286.82 m)



street map



image



topo

## CRUSHING AND SCREENING AFFECTED SOURCE SHEET

Source Identification Number <sup>1</sup>		RC Breaker CR-01	RC In-Plant CR-02	In-Plant Refuse CR-03	
Type of Crusher or Screen <sup>2</sup>		Breaker	HM	SR	
Date of Manufacture <sup>3</sup>		2012	2000	2005	
Maximum Throughput <sup>4</sup>	tons/hour	800	800	100	
	tons/year	7,008,000	7,008,000	876,000	
Material sized from/to <sup>5</sup>		4x0	4x0	+2	
Average Moisture Content (%) <sup>6</sup>		6	6	6	
Control Device ID Number <sup>7</sup>		FE	FW	FW	
Baghouse Stack Parameters <sup>8</sup>	height (ft)	N/A			
	diameter (ft)				
	volume (ACFM)				
	exit temp (°F)				
	UTM Coordinates				
Maximum Operating Schedule <sup>9</sup>	hours/day	24	24	24	
	days/year	365	365	365	
	hours/year	8760	8760	8760	
Percentage of Operation <sup>10</sup>	January-March	25	25	25	
	April-June	25	25	25	
	July-September	25	25	25	
	Oct-December	25	25	25	

1. Enter the appropriate Source Identification Number for each crusher and screen. For example, in the case of an operation which incorporates multiple crushers, the crushers should be designated CR-1, CR-2, CR-3 etc. beginning with the breaker or primary crusher. Multiple screens should be designated S-1, S-2, S-3 etc.
2. Describe types of crushers and screens using the following codes:

HM Hammermill DR Double Roll Crusher BM Ball Mill RB Rotary Breaker JC Jaw Crusher GC Gyratory Crusher OT Other - Quadroll	SS Stationary Screen SD Single Deck Screen DD Double-Deck Screen TD Triple Deck Screen OT Other
--	---
3. Enter the date that each crusher and screen was manufactured.
4. Enter the maximum throughput for each crusher and screen in tons per hour and tons per year.
5. Describe the nominal material size reduction (e.g. +2" / -").
6. Enter the average percent moisture content of the material processed.
7. Enter the appropriate Control Device Identification Number for each crusher and screen. Refer to Table A - *Control Device Listing and Control Device Identification Number Instructions* in the *Reference Document* for Control Device ID prefixes and numbering.
8. Enter the appropriate stack parameters if a baghouse control device is used.
9. Enter the maximum operating schedule for each crusher and screen in hours per day, days per year and hours per year.
10. Enter the estimated percentage of operation throughout the year for each crusher and screen.

## CRUSHING AND SCREENING AFFECTED SOURCE SHEET

Source Identification Number <sup>1</sup>		In-Plant RC SS-01			
Type of Crusher or Screen <sup>2</sup>		SD			
Date of Manufacture <sup>3</sup>		1999			
Maximum Throughput <sup>4</sup>	tons/hour	800			
	tons/year	7,008,000			
Material sized from/to: <sup>5</sup>		4X0			
Average Moisture Content (%) <sup>6</sup>		6			
Control Device ID Number <sup>7</sup>		FW			
Baghouse Stack Parameters <sup>8</sup>	height (ft)				
	diameter (ft)				
	volume (ACFM)				
	exit temp (°F)				
	UTM Coordinates				
Maximum Operating Schedule <sup>9</sup>	hours/day	24			
	days/year	365			
	hours/year	8760			
Percentage of Operation <sup>10</sup>	January-March	25			
	April-June	25			
	July-September	25			
	Oct-December	25			

1. Enter the appropriate Source Identification Number for each crusher and screen. For example, in the case of an operation which incorporates multiple crushers, the crushers should be designated CR-1, CR-2, CR-3 etc. beginning with the breaker or primary crusher. Multiple screens should be designated S-1, S-2, S-3 etc.
2. Describe types of crushers and screens using the following codes:
 

HM Hammermill DR Double Roll Crusher BM Ball Mill RB Rotary Breaker JC Jaw Crusher GC Gyratory Crusher OT Other	SS Stationary Screen SD Single Deck Screen DD Double-Deck Screen TD Triple Deck Screen OT Other
---	---
3. Enter the date that each crusher and screen was manufactured.
4. Enter the maximum throughput for each crusher and screen in tons per hour and tons per year.
5. Describe the nominal material size reduction (e.g. +2" / -\_").
6. Enter the average percent moisture content of the material processed.
7. *Device Identification Number Instructions* in the *Reference Document* for Control Device ID prefixes and numbering. Enter the appropriate Control Device Identification Number for each crusher and screen. Refer to Table A - *Control Device Listing and Control*
8. Enter the appropriate stack parameters if a baghouse control device is used.
9. Enter the maximum operating schedule for each crusher and screen in hours per day, days per year and hours per year.
10. Enter the estimated percentage of operation throughout the year for each crusher and screen.



### CONVEYING AFFECTED SOURCE SHEET

Source Identification Number <sup>1</sup>	Date of Manufacture <sup>2</sup>	Type of Material Handled <sup>3</sup>	Size of Material Handled <sup>4</sup>	Maximum Material Transfer Rate <sup>5</sup>		Average Moisture Content (%) <sup>6</sup>	Control Device <sup>7</sup>
				tons/hour	tons/year		
BC-01	2005	RC	4x0	800	7,008,000	6	PE
BC-02	2005	RC	4x0	800	7,008,000	6	PE
BC-03	2004	RC	2x0	800	7,008,000	6	PE
BC-04	2004	RC	2x0	1200	10,512,000	6	NC
BC-05	2016	RC	2x0	1200	10,512,000	6	NC
BC-06	2016	RC	2x0	1200	10,512,000	6	NC
BC-07	2016	RC	2x0	1200	10,512,000	6	NC
BC-08	2005	RC	2x0	800	7,008,000	6	PE
BC-09	1999	RC	2x0	800	7,008,000	6	PE
BC-10	1999	RC	2x0	800	7,008,000	6	PE
BC-11	2002	RC	2x0	800	7,008,000	6	PE
BC-12	2005	RC	2x0	1200	10,512,000	6	PE
BC-13	2005	RC	2x0	1200	10,512,000	6	PE
BC-14	2005	RC	2x0	1200	5,256,000	6	PE
BC-15	2005	RC	2x0	800	5,256,000	6	FE
BC-16	2005	RC	2x0	800	5,256,000	6	FE
BC-17	2012	RC	2x0	800	7,008,000	6	PE
BC-18	2012	Stoker	2x0	300	2,628,000	7	PE
BC-19	2012	CC	2x0	800	7,008,000	7	PE
BC-20	2012	CC	2x0	800	7,008,000	7	PE
BC-21	2012	CC	2x0	4000	7,008,000	7	FE

### CONVEYING AFFECTED SOURCE SHEET

Source Identification Number <sup>1</sup>	Date of Manufacture <sup>2</sup>	Type of Material Handled <sup>3</sup>	Size of Material Handled <sup>4</sup>	Maximum Material Transfer Rate <sup>5</sup>		Average Moisture Content (%) <sup>6</sup>	Control Device <sup>7</sup>
				tons/hour	tons/year		
BC-22	2012	CC	2x0	4000	7,008,000	7	PE
BC-23	1993	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-24	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-25	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-26	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-27	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-28	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-29	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-30	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-31	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-32	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-33	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-34	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-35	2005	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-36	2005	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-37	2005	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-38	1993	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-39	1997	Refuse	-1 3/8x0	800	7,008,000	10	PE
BC-40	1997	Refuse	3/8x0	300	2,628,000	15	PE
BC-41	1997	Refuse	3/8x0	300	2,628,000	15	PE
BC-42	1997	Refuse	3/8x0	300	2,628,000	15	NC

## CONVEYING AFFECTED SOURCE SHEET

[illegible]

## STORAGE ACTIVITY AFFECTED SOURCE SHEET

Source Identification Number <sup>1</sup>	Silo BS-01	Silo BS-02	Stoker BS-03	Silo BS-04	Silo BS-05
Type of Material Stored <sup>2</sup>	RC	RC	CC	CC	CC
Average Moisture Content (%) <sup>3</sup>	6	6	7	7	7
Maximum Yearly Storage Throughput (tons) <sup>4</sup>	7,008,000	7,008,000	2,628,000	7,008,000	7,008,000
Maximum Storage Capacity (tons) <sup>5</sup>	7,500	7,500	160	7,500	10,000
Maximum Base Area (ft <sup>2</sup> ) <sup>6</sup>					
Maximum Pile Height (ft) <sup>7</sup>					
Method of Material Load-in <sup>8</sup>	SS	SS	SS	SS	SS
Load-in Control Device Identification Number <sup>9</sup>	TC-FE	TC-FE	TC-FE	TC-FE	TC-FE
Storage Control Device Identification Number <sup>9</sup>	FE	FE	FE	FE	FE
Method of Material Load-out <sup>8</sup>	SS	SS	SS	SS	SS
Load-out Control Device Identification Number <sup>9</sup>	LO-UC	LO-UC	LO-TC	LO-UC	LO-UC

1. Enter the appropriate Source Identification Number for each storage activity using the following codes. For example, if the facility utilizes three storage bins, four open stockpiles and one storage building (full enclosure), the Source Identification Numbers should be BS-1, BS-2, and BS-3; OS-1, OS-2, OS-3, and OS-4; and SB-1, respectively.

BS Bin or Storage Silo (full enclosure)  
OS Open Stockpile  
SF Stockpiles with wind fences

E3 Enclosure (three sided enclosure)  
SB Storage Building (full enclosure)  
OT Other

2. Describe the type of material stored or stockpiled (e.g. clean coal, raw coal, refuse, etc).  
3. Enter the average percent moisture content of the stored material.  
4. Enter the maximum yearly storage throughput for each storage activity.  
5. Enter the maximum storage capacity for each storage activity in tons (e.g. silo capacity, maximum stockpile size, etc.)  
6. For stockpiles, enter the maximum stockpile base area.  
7. For stockpiles, enter the maximum stockpile height.  
8. Enter the method of load-in or load-out to/from stockpiles or bins using the following codes:

CS Clamshell  
FC Fixed Height Chute from Bins  
FE Front Endloader  
MC Mobile Conveyor/Stacker  
UC Under-pile or Under-Bin Reclaim Conveyor  
RC Rake or Bucket Reclaim Conveyor

SS Stationary Conveyor/Stacker  
ST Stacking Tube  
TC Telescoping Chute from Bins  
TD Truck Dump  
PC Pneumatic Conveyor/Stacker  
OT Other

## STORAGE ACTIVITY AFFECTED SOURCE SHEET

Source Identification Number <sup>1</sup>	<b>BS-06</b>	<b>BS-07</b>			
Type of Material Stored <sup>2</sup>	<b>CC</b>	<b>Refuse</b>			
Average Moisture Content (%) <sup>3</sup>	<b>7</b>	<b>10</b>			
Maximum Yearly Storage Throughput (tons) <sup>4</sup>	<b>7,008,000</b>	<b>3,504,000</b>			
Maximum Storage Capacity (tons) <sup>5</sup>	<b>200</b>	<b>150</b>			
Maximum Base Area (ft <sup>2</sup> ) <sup>6</sup>		<b>Emergency Use Only</b>			
Maximum Pile Height (ft) <sup>7</sup>					
Method of Material Load-in <sup>8</sup>	<b>SS</b>	<b>SS</b>			
Load-in Control Device Identification Number <sup>9</sup>	<b>TC-FE</b>	<b>TC-FE</b>			
Storage Control Device Identification Number <sup>9</sup>	<b>FE</b>	<b>FE</b>			
Method of Material Load-out <sup>8</sup>	<b>TC</b>	<b>Chute</b>			
Load-out Control Device Identification Number <sup>9</sup>	<b>LR-TC</b> <b>LO-TC</b>	<b>LO-MDH</b>			

1. Enter the appropriate Source Identification Number for each storage activity using the following codes. For example, if the facility utilizes three storage bins, four open stockpiles and one storage building (full enclosure), the Source Identification Numbers should be BS-1, BS-2, and BS-3; OS-1, OS-2, OS-3, and OS-4; and SB-1, respectively.

BS Bin or Storage Silo (full enclosure)  
OS Open Stockpile  
SF Stockpiles with wind fences

E3 Enclosure (three sided enclosure)  
SB Storage Building (full enclosure)  
OT Other

2. Describe the type of material stored or stockpiled (e.g. clean coal, raw coal, refuse, etc).  
3. Enter the average percent moisture content of the stored material.  
4. Enter the maximum yearly storage throughput for each storage activity.  
5. Enter the maximum storage capacity for each storage activity in tons (e.g. silo capacity, maximum stockpile size, etc.)  
6. For stockpiles, enter the maximum stockpile base area.  
7. For stockpiles, enter the maximum stockpile height.

8. Enter the method of load-in or load-out to/from stockpiles or bins using the following codes:

CS Clamshell  
FC Fixed Height Chute from Bins  
FE Front Endloader  
MC Mobile Conveyor/Stacker  
UC Under-pile or Under-Bin Reclaim Conveyor  
RC Rake or Bucket Reclaim Conveyor

SS Stationary Conveyor/Stacker  
ST Stacking Tube  
TC Telescoping Chute from Bins  
TD Truck Dump  
PC Pneumatic Conveyor/Stacker  
OT Other

## STORAGE ACTIVITY AFFECTED SOURCE SHEET

Source Identification Number <sup>1</sup>	OS-01	OS-02	OS-03	OS-04	
Type of Material Stored <sup>2</sup>	RC	RC	RC	RC	
Average Moisture Content (%) <sup>3</sup>	6	6	6	6	
Maximum Yearly Storage Throughput (tons) <sup>4</sup>	7,008,000	5,256,000	5,256,000	5,256,000	
Maximum Storage Capacity (tons) <sup>5</sup>	20,000	25,000	40,000	40,000	
Maximum Base Area (ft <sup>2</sup> ) <sup>6</sup>	38,869	38,869	88,869	88,869	
Maximum Pile Height (ft) <sup>7</sup>	50'	50'	75	75	
Method of Material Load-in <sup>8</sup>	SS	SS	SS	SS	
Load-in Control Device Identification Number <sup>9</sup>	TC-MDH	TC-MDH	TC-PE/ST	TC-PE/ST	
Storage Control Device Identification Number <sup>9</sup>	SW-WS	SW-WS	SW-WS	SW-WS	
Method of Material Load-out <sup>8</sup>	UC	Loader	UC	UC	
Load-out Control Device Identification Number <sup>9</sup>	LO-UC	LO-MDH	LO-UC	LO-UC	

1. Enter the appropriate Source Identification Number for each storage activity using the following codes. For example, if the facility utilizes three storage bins, four open stockpiles and one storage building (full enclosure), the Source Identification Numbers should be BS-1, BS-2, and BS-3; OS-1, OS-2, OS-3, and OS-4; and SB-1, respectively.

BS Bin or Storage Silo (full enclosure)  
 OS Open Stockpile  
 SF Stockpiles with wind fences

E3 Enclosure (three sided enclosure)  
 SB Storage Building (full enclosure)  
 OT Other

2. Describe the type of material stored or stockpiled (e.g. clean coal, raw coal, refuse, etc).
3. Enter the average percent moisture content of the stored material.
4. Enter the maximum yearly storage throughput for each storage activity.
5. Enter the maximum storage capacity for each storage activity in tons (e.g. silo capacity, maximum stockpile size, etc.)
6. For stockpiles, enter the maximum stockpile base area.
7. For stockpiles, enter the maximum stockpile height.
8. Enter the method of load-in or load-out to/from stockpiles or bins using the following codes:

CS Clamshell  
 FC Fixed Height Chute from Bins  
 FE Front Endloader  
 MC Mobile Conveyor/Stacker  
 UC Under-pile or Under-Bin Reclaim Conveyor  
 RC Rake or Bucket Reclaim Conveyor

SS Stationary Conveyor/Stacker  
 ST Stacking Tube  
 TC Telescoping Chute from Bins  
 TD Truck Dump  
 PC Pneumatic Conveyor/Stacker  
 OT Other

## ATTACHMENT H

### BAGHOUSE AIR POLLUTION CONTROL DEVICE SHEET *Not applicable for this facility*

Complete a Baghouse Air Pollution Control Device Sheet for each baghouse control device.

1. Baghouse Control Device Identification Number:
2. Manufacturer's name and model identification:
3. Number of compartments in baghouse:
4. Number of compartments online during normal operation and conditions:
5. Gas flow rate into baghouse: \_\_\_\_\_ ACFM @ \_\_\_\_\_ °F and \_\_\_\_\_ PSIA
6. Total cloth area: \_\_\_\_\_ ft<sup>2</sup>
7. Operating air to cloth ratio: \_\_\_\_\_ ft/min
8. Filter media type: \_\_\_\_\_
9. Stabilized static pressure drop across baghouse: \_\_\_\_\_ inches H<sub>2</sub>O
10. Baghouse operation is:  
☐ Continuous    ☐ Automatic    ☐ Intermittent
11. Method used to clean bags:  
☐ Shaker    ☐ Pulse jet    ☐ Reverse jet    ☐ Other
12. Emission rate of particulate matter entering and exiting baghouse at maximum design operating conditions:  
Entering baghouse: \_\_\_\_\_ lb/hr and \_\_\_\_\_ grains/ACF  
Exiting baghouse: \_\_\_\_\_ lb/hr and \_\_\_\_\_ grains/ACF
13. Guaranteed minimum baghouse collection efficiency: \_\_\_\_\_ %
14. Provide a written description of the capture system (e.g. hooding and ductwork arrangement), size of ductwork and hoods and air volume, capacity and operating horsepower of fan:
15. Describe the method of disposal for the collected material:

## INPUTS

Include all information for each emission source and transfer point as listed in the permit application.

Name of applicant: Kanawha Eagle Mining  
 Name of plant: South Hollow Plant  
Resubmittal

Page 1

**1. CRUSHING AND SCREENING** (including all primary and secondary crushers and screens)

### 1a. PRIMARY CRUSHING

Primary Crusher ID Number	Description	Maximum Material Processing Capacity		Control Device	Control Efficiency
		TPH	TPY	ID Number	%
0					
CR-01	Breaker	800	7,008,000	FE	80
CR-02	In Plant RC Crusher	800	7,008,000	FW	90
CR-03	In Plant Refuse	100	876,000	FW	90

#### 1b. SECONDARY AND TERTIARY CRUSHING

[illegible]

## 1C. SCREENING

[illegible]



## 2. TRANSFER POINTS (Including all conveyor transfer points, equipment transfer points etc.)

Page 2

k =	Particle Size Multiplier (dimensionless)	PM 0.74	PM-10 0.35
U =	Mean Wind Speed (mph)	7	

Transfer Point ID No.	Transfer Point Description Include ID Numbers of all conveyors, crushers, screens, stockpiles, etc. involved	Material Moisture Content %	Maximum Transfer Rate		Control Device ID Number	Control Efficiency %
			TPH	TPY		
TP01	Eagle Mine to BC-01	6	800	7,008,000	TC-FE	80
TP02	BC-01 to SS-01	6	800	7,008,000	TC-FW	90
TP03	Peerless to BC-02	6	800	7,008,000	TC-FE	80
TP04	BC-02 to OS-01	6	800	7,008,000	TC-MDH	0
TP05	OS-01 to CR-01	6	800	7,008,000	LO-UC	80
TP06	CR-01 to BC-03	6	800	7,008,000	TC-FE	80
TP07	BC-03 to BC-09	6	800	7,008,000	TC-FE	80
TP08	BC-04 to BC-05	6	1,200	10,512,000	TC-FE	80
TP09	BC-05 to OS-02	6	1,200	5,256,000	TC-MDH	80
TP10	OS-02 to Truck	6	600	5,256,000	LO-UC	80
TP11	Truck to OS-03	6	600	5,256,000	TC-FE	80
TP12	BC-05 to BC-06	6	1,200	10,512,000	TC-FE	80
TP13	BC-06 to BC-07	6	1,200	10,512,000	TC-FE	80
TP14	BC-07 to BC-08	6	1,200	7,008,000	TC-FE	80
TP15	BC-08 to BC-09	6	800	7,008,000	TC-FE	80
TP16	BC-09 to SS-01	6	800	7,008,000	TC-FW	90
TP17	SS-01 to BC-10	6	800	7,008,000	TC-FW	90
TP18	SS-01 to CR-02	6	800	7,008,000	TC-FW	90
TP19	CR-02 to BC-10	6	800	7,008,000	TC-FW	90
TP20	BC-10 to BS-01	6	800	7,008,000	TC-FE	80
TP21	BC-10 to BC-11	6	800	7,008,000	TC-FE	80
TP22	BC-11 to BS-02	6	800	7,008,000	TC-FE	80
TP23	BC-07 to BC-12	6	1,200	10,512,000	TC-FE	80
TP24	BC-12 to BC-13	6	1,200	10,512,000	TC-FE	80
TP25	BC-13 to OS-03	6	1,200	5,256,000	TC-PE	50
TP26	BC-13 to BC-14	6	1,200	5,256,000	TC-FE	80
TP27	BC-14 to OS-04	6	1,200	5,256,000	TC-PE	50
TP28	OS-04 to BC-15	6	800	5,256,000	LO-UC	80
TP29	BC-15 to BC-16	6	800	5,256,000	TC-FE	80
TP30	BC-16 to BC-17	6	800	5,256,000	TC-FE	80
TP31	OS-03 to BC-17	6	800	5,256,000	LO-UC	80
TP32	BS-02 to BC-17	6	800	7,008,000	LO-UC	80
TP33	BS-01 to BC-17	6	800	7,008,000	LO-UC	80
TP34	BC-17 to Plant	6	800	7,008,000	TC-FW	90
TP35	Plant to BC-18	7	300	2,628,000	TC-FW	90
TP36	BC-18 to BS-03	7	300	2,628,000	TC-FE	80
TP37	BS-03 to Rail	7	300	2,628,000	LR-TC	75
TP38	BS-03 to Truck	7	300	2,628,000	LO-TC	75
TP39	Plant to BC-19	7	800	7,008,000	TC-FE	80
TP40	BS-19 to BS-04	7	800	7,008,000	TC-FE	80
TP41	BC-19 to BC-20	7	800	7,008,000	TC-PE	50
TP42	BC-20 to BS-05	7	800	7,008,000	TC-FE	80
TP43	BS-05 to BC-21	7	4,000	7,008,000	TC-PE	50
TP44	BC-21 to BC-22	7	4,000	7,008,000	LO-UC	80
TP45	BS-04 to BC-22	7	4,000	7,008,000	LO-UC	80
TP46	BC-22 to BS-06	7	4,000	7,008,000	TC-FE	80
TP47	BS-06 to Rail	7	4,000	7,008,000	LR-TC	75
TP48	BS-06 to Truck	7	400	3,504,000	LO-TC	75
TP49	SS-01 to CR-03	6	100	876,000	TC-FW	90
TP50	CR-03 to BC-23	6	100	876,000	TC-FW	90
TP51	Plant to BC-23	10	800	7,008,000	TC-FW	90
TP52	BC-23 to BS-07	10	400	3,504,000	TC-FE	80
TP53	BS-07 to Truck	10	400	3,504,000	LO-MDH	0
TP54	Truck to Disposal Area	10	400	3,504,000	UL-MDH	0
TP55	BC-23 to BC-24	10	800	7,008,000	TC-FE	80
TP56	BC-24 to BC-25	10	800	7,008,000	TC-FE	80
TP57	BC-25 to BC-26	10	800	7,008,000	TC-FE	80
TP58	BC-26 to BC-27	10	800	7,008,000	TC-FE	80
TP59	BC-27 to BC-28	10	800	7,008,000	TC-FE	80

[illegible]



**EMISSIONS SUMMARY**

Name of applicant: Kanawha Eagle Mining  
Name of plant: South Hollow Plant  
OAQ Calc Sheet

**Particulate Matter or PM (for 45CSR14 Major Source Determination)**

Uncontrolled PM		Controlled PM	
lb/hr	TPY	lb/hr	TPY

FUGITIVE EMISSIONS				
<i>Stockpile Emissions</i>	0.25	1.09	0.06	0.27
<i>Unpaved Haulroad Emissions</i>	541.42	2,377.93	162.43	713.38
<i>Paved Haulroad Emissions</i>	0.00	0.00	0.00	0.00
<b>Fugitive Emissions Total</b>	<b>541.67</b>	<b>2,379.02</b>	<b>162.49</b>	<b>713.65</b>

POINT SOURCE EMISSIONS				
<i>Equipment Emissions</i>	114.00	499.32	13.00	56.94
<i>Transfer Point Emissions</i>	46.73	147.78	11.61	35.09
<b>Point Source Emissions Total*</b>	<b>160.73</b>	<b>647.10</b>	<b>24.61</b>	<b>92.03</b>

\*Note: Point Source Total Controlled PM TPY emissions is used for 45CSR14 Major Source determination (see below)

<b>Facility Emissions Total</b>	<b>702.40</b>	<b>3,026.12</b>	<b>187.09</b>	<b>805.69</b>
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**\*Facility Potential to Emit (PTE) (Baseline Emissions) = 92.03**  
(Based on Point Source Total controlled PM TPY emissions from above) ENTER ON LINE 26 OF APPLICATION

**Particulate Matter under 10 microns, or PM-10 (for 45CSR30 Major Source Determination)**

Uncontrolled PM-10		Controlled PM-10	
lb/hr	TPY	lb/hr	TPY

FUGITIVE EMISSIONS				
<i>Stockpile Emissions</i>	0.12	0.51	0.03	0.13
<i>Unpaved Haulroad Emissions</i>	156.47	687.24	46.94	206.17
<i>Paved Haulroad Emissions</i>	0.00	0.00	0.00	0.00
<b>Fugitive Emissions Total</b>	<b>156.59</b>	<b>687.75</b>	<b>46.97</b>	<b>206.30</b>

POINT SOURCE EMISSIONS				
<i>Equipment Emissions</i>	53.58	234.68	6.11	26.76
<i>Transfer Point Emissions</i>	22.10	69.90	5.49	16.60
<b>Point Source Emissions Total*</b>	<b>75.68</b>	<b>304.58</b>	<b>11.60</b>	<b>43.36</b>

\*Note: Point Source Total Controlled PM-10 TPY emissions is used for 45CSR30 Major Source determination

<b>Facility Emissions Total</b>	<b>232.27</b>	<b>992.33</b>	<b>58.57</b>	<b>249.66</b>
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## Page 1

Primary Crusher ID Number	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
CR-01	16.000	70.080	3.200	14.016	7.520	32.938	1.504	6.588
CR-02	16.000	70.080	1.600	7.008	7.520	32.938	0.752	3.294
CR-03	2.000	8.760	0.200	0.876	0.940	4.117	0.094	0.412
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL	34.000	148.920	5.000	21.900	15.980	69.992	2.350	10.293

[illegible]

Screen ID Number	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SS-01	80.000	350.400	8.000	35.040	37.600	164.688	3.760	16.469
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL	80.000	350.400	8.000	35.040	37.600	164.688	3.760	16.469

Crushing and Screening	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
TOTAL	114.000	499.320	13.000	56.940	53.580	234.680	6.110	26.762

## 1. Emissions From CRUSHING AND SCREENING (Continued)

Page 2

### EMISSION FACTORS

source: Air Pollution Engineering Manual and References

(lb/ton of material throughput)

PM	
Primary Crushing	0.02
Tertiary Crushing	0.06
Screening	0.1

PM-10	
Primary Crushing	0.0094
Tertiary Crushing	0.0282
Screening	0.047

## 2. Emissions From TRANSFER POINTS

Transfer Point ID No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
TP01	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP02	0.630	2.760	0.063	0.276	0.298	1.306	0.030	0.131
TP03	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP04	0.630	2.760	0.630	2.760	0.298	1.306	0.298	1.306
TP05	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP06	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP07	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP08	0.945	4.140	0.189	0.828	0.447	1.958	0.089	0.392
TP09	0.945	2.070	0.189	0.414	0.447	0.979	0.089	0.196
TP10	0.473	2.070	0.095	0.414	0.224	0.979	0.045	0.196
TP11	0.473	2.070	0.095	0.414	0.224	0.979	0.045	0.196
TP12	0.945	4.140	0.189	0.828	0.447	1.958	0.089	0.392
TP13	0.945	4.140	0.189	0.828	0.447	1.958	0.089	0.392
TP14	0.945	2.760	0.189	0.552	0.447	1.306	0.089	0.261
TP15	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP16	0.630	2.760	0.063	0.276	0.298	1.306	0.030	0.131
TP17	0.630	2.760	0.063	0.276	0.298	1.306	0.030	0.131
TP18	0.630	2.760	0.063	0.276	0.298	1.306	0.030	0.131
TP19	0.630	2.760	0.063	0.276	0.298	1.306	0.030	0.131
TP20	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP21	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP22	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP23	0.945	4.140	0.189	0.828	0.447	1.958	0.089	0.392
TP24	0.945	4.140	0.189	0.828	0.447	1.958	0.089	0.392
TP25	0.945	2.070	0.473	1.035	0.447	0.979	0.224	0.490
TP26	0.945	2.070	0.189	0.414	0.447	0.979	0.089	0.196
TP27	0.945	2.070	0.473	1.035	0.447	0.979	0.224	0.490
TP28	0.630	2.070	0.126	0.414	0.298	0.979	0.060	0.196
TP29	0.630	2.070	0.126	0.414	0.298	0.979	0.060	0.196
TP30	0.630	2.070	0.126	0.414	0.298	0.979	0.060	0.196
TP31	0.630	2.070	0.126	0.414	0.298	0.979	0.060	0.196
TP32	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP33	0.630	2.760	0.126	0.552	0.298	1.306	0.060	0.261
TP34	0.630	2.760	0.063	0.276	0.298	1.306	0.030	0.131
TP35	0.190	0.834	0.019	0.083	0.090	0.395	0.009	0.039
TP36	0.190	0.834	0.038	0.167	0.090	0.395	0.018	0.079
TP37	0.190	0.834	0.048	0.209	0.090	0.395	0.023	0.099
TP38	0.190	0.834	0.048	0.209	0.090	0.395	0.023	0.099
TP39	0.508	2.224	0.102	0.445	0.240	1.052	0.048	0.210
TP40	0.508	2.224	0.102	0.445	0.240	1.052	0.048	0.210
TP41	0.508	2.224	0.254	1.112	0.240	1.052	0.120	0.526
TP42	0.508	2.224	0.102	0.445	0.240	1.052	0.048	0.210
TP43	2.539	2.224	1.270	1.112	1.201	1.052	0.601	0.526
TP44	2.539	2.224	0.508	0.445	1.201	1.052	0.240	0.210
TP45	2.539	2.224	0.508	0.445	1.201	1.052	0.240	0.210
TP46	2.539	2.224	0.508	0.445	1.201	1.052	0.240	0.210
TP47	2.539	2.224	0.635	0.556	1.201	1.052	0.300	0.263
TP48	0.254	1.112	0.063	0.278	0.120	0.526	0.030	0.132
TP49	0.079	0.345	0.008	0.035	0.037	0.163	0.004	0.016
TP50	0.079	0.345	0.008	0.035	0.037	0.163	0.004	0.016
TP51	0.308	1.350	0.031	0.135	0.146	0.639	0.015	0.064
TP52	0.154	0.675	0.031	0.135	0.073	0.319	0.015	0.064

## 2. Emissions From TRANSFER POINTS (continued)

[illegible]



0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTALS	46.733	147.780	11.606	35.095	22.103	69.896	5.489	16.599

**Source:**

AP42, Fifth Edition, Revised 11/2006

**13.2.4 Aggregate Handling and Storage Piles**

**Emissions From Batch Drop**

$$E = k \cdot (0.0032) \cdot [(U/5)^{1.3}] / [(M/2)^{1.4}] = \text{pounds/ton}$$

Where:

		PM	PM-10
k =	Particle Size Multiplier (dimensionless)	0.74	0.35
U =	Mean Wind Speed (mph)		
M =	Material Moisture Content (%)		

**Assumptions:**

**k - Particle size multiplier**

For PM (< or equal to 30um) k = 0.74

For PM-10 (< or equal to 10um) k = 0.35

**Emission Factor**

For PM  $E = \text{\$I\$88} \cdot (0.0032) \cdot ((((\text{Inputs!}\text{\$I\$72})/5)^{1.3}) / (((\text{Inputs!G78} + 0.000000001)/2)^{1.4}))$   
=lb/ton

For PM-10  $E = \text{\$J\$88} \cdot (0.0032) \cdot ((((\text{Inputs!}\text{\$I\$72})/5)^{1.3}) / (((\text{Inputs!G78} + 0.000000001)/2)^{1.4}))$   
=lb/ton

For lb/hr [lb/ton]\*[ton/hr] = [lb/hr]

For Tons/year [lb/ton]\*[ton/yr]\*[ton/2000lb] = [ton/yr]

### 3. Emissions From WIND EROSION OF STOCKPILES

Stockpile ID No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
OS01	0.249	1.089	0.062	0.272	0.117	0.512	0.029	0.128
OS02	0.249	1.089	0.062	0.272	0.117	0.512	0.029	0.128
OS03	0.341	1.494	0.085	0.373	0.160	0.702	0.040	0.176
OS04	0.249	1.089	0.062	0.272	0.117	0.512	0.029	0.128
OS05	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
TOTALS	0.249	1.089	0.062	0.272	0.117	0.512	0.029	0.128

#### Source:

Air Pollution Engineering Manual

Storage Pile Wind Erosion (Active Storage)

$$E = 1.7[s/1.5][(365-p)/235][f/15] = (\text{lb/day/acre})$$

Where:

s =	silt content of material
p =	number of days with >0.01 inch of precipitation per year
f =	percentage of time that the unobstructed wind speed exceeds 12 mph at the mean pile height

#### Emission Factors

For PM  $E = (1.7)((\text{Inputs!F147})/1.5)((365-\text{Inputs!I139})/235)((\text{Inputs!I140})/15)$

For PM-10  $E = 0.47(1.7)((\text{Inputs!F147})/1.5)((365-\text{Inputs!I139})/235)((\text{Inputs!I140})/15)$

For lb/hr  $[\text{lb/day/acre}][\text{day/24hr}][\text{base area of pile (acres)}] = \text{lb/hr}$

For Ton/yr  $[\text{lb/day/acre}][365\text{day/yr}][\text{Ton/2000lb}][\text{base area of pile (acres)}] = \text{Ton/yr}$

#### 4. Emissions From UNPAVED HAULROADS

Item No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
1	90.12	395.70	27.03	118.71	26.04	114.36	7.81	34.31
2	89.44	395.70	26.83	118.71	25.85	114.36	7.75	34.31
3	120.34	527.59	36.10	158.28	34.78	152.48	10.43	45.74
4	240.67	1055.18	72.20	316.55	69.56	304.95	20.87	91.49
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.86	3.76	0.26	1.13	0.25	1.09	0.07	0.33
TOTALS	541.42	2377.93	162.43	713.38	156.47	687.24	46.94	206.17

##### Source:

AP42, Fifth Edition, Revised 11/2006

##### 13.2.2 Unpaved Roads

Emission Estimate For Unpaved Haulroads at Industrial Sites (equation 1)

$$E = k \cdot \left( \frac{s}{12} \right)^a \cdot \left( \frac{W}{3} \right)^b = \text{lb/vmt}$$

Where:

		PM	PM-10
k =	particle size multiplier	4.90	1.50
a =	empirical constant	0.7	0.9
b =	empirical constant	0.45	0.45
P =	number of days per year with precipitation >0.01 inch	157	

##### Emission Factors

For PM  $E = ((\$I\$35) * (((Inputs! \$I\$163) / 12) ^ {(\$I\$36)}) * (((Inputs! H171) / 3) ^ {\$I\$37})) * ((365 -$

For PM-10  $E = ((\$J\$35) * (((Inputs! \$I\$163) / 12) ^ {(\$J\$36)}) * (((Inputs! H171) / 3) ^ {\$J\$37})) * ((365 -$

For lb/hr  $(\text{lb/vmt}) * (\text{miles per trip}) * (\text{Max trips per hour})$

For Ton/yr  $(\text{lb/vmt}) * (\text{miles per trip}) * (\text{Max trips per year}) * (1/2000)$

## 5. Emissions From INDUSTRIAL PAVED HAULROADS

Item No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Source:

AP42, Fifth Edition, Revised 11/2006  
13.2.1 PAVED ROADS

### Emission Estimate For Paved Haulroads

$$E = [k * (sL/2)^{0.65} * (W/3)^{1.5} - C] * (1 - (P/4*N)) = \text{lb / Vehicle Mile Traveled (VMT)}$$

Where:

		PM	PM-10
k =	particle size multiplier	0.082	0.016
sL =	road surface silt loading, (g/ft <sup>2</sup> )	1	
P =	number of days per year with precipitation >0.01 inch	157	
N =	number of days in averaging period	365	
C =	factor for exhaust, brake wear and tire wear	0.0047	0.0047

### Emission Factors

For PM  $E = (\$34 * (((\$35)/2)^{0.65} * (((\text{Inputs!G190})/3)^{1.5}) - (\$38)) * (1 - ((\text{Inputs!G190})/365)))$

For PM-10  $E = (\$34 * (((\$35)/2)^{0.65} * (((\text{Inputs!G190})/3)^{1.5}) - (\$38)) * (1 - ((\text{Inputs!G190})/365)))$

For lb/hr  $(\text{lb/vmt}) * (\text{miles per trip}) * (\text{Max trips per hour})$

For Ton/yr  $(\text{lb/vmt}) * (\text{miles per trip}) * (\text{Max trips per year}) * (1/2000)$

Legal Advertisement

**AIR QUALITY PERMIT NOTICE  
Notice of Application**

Notice is given that Kanawha Eagle Mining LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a General Permit Registration Modification for a coal preparation plant facility located on Fields Creek near Winifrede in Kanawha County, West Virginia. Coordinates for the facility are as follows: latitude 38.156117 longitude -81.559544.

The applicant estimates the potential to discharge the following Regulated Air Pollutants will be: particulate matter baseline emissions of 92 tons per year, point source emissions of 43 tons per year of particulate matter less than 10 microns, and the controlled facility emission total of 806 tons per year.

The applicant estimates the potential to discharge the following Regulated Air Pollutants from the generator diesel combustion engines will be: criteria pollutants for the engine is estimated to be: NOx 6.775 tons per year, CO 1.44 tons per year, VOC 0.54 tons per year, SOx 0.446 tons per year and PM10 0.5866 tons per year. The potential to emit hazardous pollutants from the engine is estimated to be: Benzene 0.001337 tons per year, Toluene 0.00587 tons per year, Xylene 0.000408 tons per year, Acetaldehyde 0.01099 tons per year, and Formaldehyde 0.001692 tons per year.

Startup of operation is planned to begin upon permit approval. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57<sup>th</sup> Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.

Dated this the 9<sup>th</sup> day of February 2017

By: Kanawha Eagle Mining, LLC  
D. Edward Brown  
Vice President  
3228 Summit Square Place  
Suite 180  
Lexington, KY 40509

**ATTACHMENT K**

**ELECTRONIC SUBMITTAL**

#### SECTION IV. CERTIFICATION OF INFORMATION

This General Permit Registration Application shall be signed below by a Responsible Official. A Responsible Official is a President, Vice President, Secretary, Treasurer, General Partner, General Manager, a member of a Board of Directors, or Owner, depending on business structure. A business may certify an Authorized Representative who shall have authority to bind the Corporation, Partnership, Limited Liability Company, Association, Joint Venture or Sole Proprietorship. Required records of daily throughput, hours of operation and maintenance, general correspondence, Emission Inventory, Certified Emission Statement, compliance certifications and all required notifications must be signed by a Responsible Official or an Authorized Representative. If a business wishes to certify an Authorized Representative, the official agreement below shall be checked off and the appropriate names and signatures entered. Any administratively incomplete or improperly signed or unsigned Registration Application will be returned to the applicant.

##### FOR A CORPORATION (domestic or foreign)

G I certify that I am a President, Vice President, Secretary, Treasurer or in charge of a principal business function of the corporation

##### FOR A PARTNERSHIP

G I certify that I am a General Partner

##### FOR A LIMITED LIABILITY COMPANY

I I certify that I am a General Partner or General Manager

##### FOR AN ASSOCIATION

G I certify that I am the President or a member of the Board of Directors

##### FOR A JOINT VENTURE

G I certify that I am the President, General Partner or General Manager

##### FOR A SOLE PROPRIETORSHIP

G I certify that I am the Owner and Proprietor

*is an Authorized Representative and in that capacity shall represent the interest of the business (e.g., Corporation, Partnership, Limited Liability Company, Association Joint Venture or Sole Proprietorship) and may obligate and legally bind the business. If the business changes its Authorized Representative, a Responsible Official shall notify the Chief of the Office of Air Quality immediately, and/or,*

*I hereby certify that all information contained in this General Permit Registration Application and any supporting documents appended hereto is, to the best of my knowledge, true, accurate and complete, and that all reasonable efforts have been made to provide the most comprehensive information possible*

Signature

(please use blue ink)

Responsible Official

Date

Name & Title D. Edward Brown, Vice President

(please print or type)

Signature

(please use blue ink)

Authorized Representative (if applicable)

Date

Applicant's Name: Kanawha Eagle Mining, LLC

Phone: 304-513-0668 Jeff Caldwell, contact (jcaldwell@blackhawkmining.com)

Email: ebrown@blackhawkmining.com

### SECTION III. ATTACHMENTS AND SUPPORTING DOCUMENTS

PLEASE CHECK ALL ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:

Please See the appropriate reference document for an explanation of the attachments listed below.

- ☐ ATTACHMENT A : CURRENT BUSINESS CERTIFICATE
- ☐ ATTACHMENT B: PROCESS DESCRIPTION
- ☐ ATTACHMENT C: DESCRIPTION OF FUGITIVE EMISSIONS
- ☐ ATTACHMENT D: PROCESS FLOW DIAGRAM
- ☐ ATTACHMENT E: PLOT PLAN
- ☐ ATTACHMENT F: AREA MAP
- ☐ ATTACHMENT G: AFFECTED SOURCE SHEETS
- ☐ ATTACHMENT H: BAGHOUSE AIR POLLUTION CONTROL DEVICE SHEET
- ☐ ATTACHMENT I: EMISSIONS CALCULATIONS
- ☐ ATTACHMENT J: CLASS I LEGAL ADVERTISEMENT
- ☐ ATTACHMENT K: ELECTRONIC SUBMITTAL DISKETTE
- ☐ CERTIFICATION OF INFORMATION
- ☐ APPLICATION FEE

PLEASE MAIL AN ORIGINAL AND TWO COPIES OF THE COMPLETE GENERAL PERMIT REGISTRATION APPLICATION WITH THE SIGNATURE(S) TO THE DAQ PERMITTING SECTION AT THE ADDRESS SHOWN ON THE FRONT PAGE. PLEASE DO NOT FAX PERMIT APPLICATIONS. FOR QUESTIONS REGARDING APPLICATIONS OR WEST VIRGINIA AIR POLLUTION RULES AND REGULATIONS PLEASE CALL (304) 926-3727.



## ENGINE DATA SHEET

Source Identification Number <sup>1</sup>		Gen Set - 1		Gen Set - 2		Gen Set - 3	
Engine Manufacturer and Model		CAT Olympian		CAT NGGWV		CAT D150-8 6.6	
6.6 Manufacturer's Rated bhp/rpm		1800		1800		1800	
Source Status <sup>2</sup>		ES		ES		ES	
Date Installed/Modified/Removed (Month/Year) <sup>3</sup>		2013		2013		2014	
Engine Manufactured/Reconstruction Date <sup>4</sup>		2013		2013		2014	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart IIII? (Yes or No) <sup>5</sup>		Yes		Yes		Yes	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No) <sup>6</sup>		No		N/A		N/A	
Engine, Fuel and Combustion Data	Engine Type	4 Stroke		4 Stroke		4 Stroke	
	APCD Type <sup>8</sup>	N/A		N/A		N/A	
	Fuel Type <sup>9</sup>	No 2 Fuel Oil		No 2 Fuel Oil		No 2 Fuel Oil	
	H <sub>2</sub> S (gr/100 scf)	N/A		N/A		N/A	
	Operating bhp/rpm	248		245		245	
	BSFC (Btu/bhp-hr)	N/A		N/A		N/A	
	Fuel throughput (ft <sup>3</sup> /hr)	11.8 gal/hr		19.4		10.4	
	Fuel throughput (MMft <sup>3</sup> /yr)	5900		9700		5200	
	Operation (hrs/yr)	500		500		500	
Reference <sup>10</sup>	Potential Emissions <sup>11</sup>	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
	NO <sub>x</sub>	7.6880	1.922	9.7030	2.426	5.8280	1.457
	CO	1.6566	0.414	2.0908	0.523	1.2558	1.314
	VOC	0.6126	0.153	0.7731	0.193	0.4644	0.116
	SO <sub>2</sub>	0.5084	0.127	0.6417	0.160	0.3854	0.096
	PM <sub>10</sub>	0.5456	0.136	0.6886	0.172	0.4136	0.103
	Formaldehyde	0.00188	0.00047	0.00309	0.000772	0.0018	0.00045

- Enter the appropriate Source Identification Number for each reciprocating internal combustion compressor/generator engine located at the facility. Multiple compressor engines should be designated CE-1, CE-2, CE-3 etc. Emergency Generator engines should be designated EG-1, EG-2, EG-3 etc. If more than three (3) engines exist, please use additional sheets.
- Enter the Source Status using the following codes:  

NS     Construction of New Source (installation)

ES     Existing Source

- MS      Modification of Existing Source                      RS      Removal of Source
3. Enter the date (or anticipated date) of the engine's installation (construction of source), modification or removal.
  4. Enter the date that the engine was manufactured, modified or reconstructed.
  5. Is the engine a certified stationary compression ignition internal combustion engine according to 40CFR60 Subpart IIII. If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance according to 40CFR§60.4210 as appropriate.

**Provide a manufacturer's data sheet for all engines being registered.**

6. Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart JJJJ. If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance according to 40CFR§60.4243a(2)(i) through (iii), as appropriate.

**Provide a manufacturer's data sheet for all engines being registered.**

7. Enter the Engine Type designation(s) using the following codes:
 

LB2S    Lean Burn Two Stroke	RB4S    Rich Burn Four Stroke
LB4S    Lean Burn Four Stroke	
8. Enter the Air Pollution Control Device (APCD) type designation(s) using the following codes:
 

A/F      Air/Fuel Ratio	IR      Ignition Retard
HEIS    High Energy Ignition System	SIPC    Screw-in Precombustion Chambers
PSC    Prestratified Charge	LEC    Low Emission Combustion
NSCR   Rich Burn & Non-Selective Catalytic Reduction	SCR    Lean Burn & Selective Catalytic Reduction
9. Enter the Fuel Type using the following codes:
 

PQ      Pipeline Quality Natural Gas	RG      Raw Natural Gas
2FO    #2 Fuel Oil	LPG    Liquid Propane Gas
10. Enter the Potential Emissions Data Reference designation using the following codes. Attach all referenced data to this *Compressor/Generator Data Sheet(s)*.
 

MD      Manufacturer's Data	AP      AP-42
GR      GRI-HAPCalc™	OT      Other _____ (please list)
11. Enter each engine's Potential to Emit (PTE) for the listed regulated pollutants in pounds per hour and tons per year. PTE shall be calculated at manufacturer's rated brake horsepower and may reflect reduction efficiencies of listed Air Pollution Control Devices. Emergency generator engines may use 500 hours of operation when calculating PTE. PTE data from this data sheet shall be incorporated in the *Emissions Summary Sheet*.

### ENGINE DATA SHEET

Source Identification Number <sup>1</sup>		Gen Set - 4		Gen Set - 5		Gen Set - 6	
Engine Manufacturer and Model		CAT XQ20-P2		CAT XQ20-P2		CAT XQ30-6	
Manufacturer's Rated bhp/rpm		1800		1800		1800	
Source Status <sup>2</sup>		ES		ES		ES	
Date Installed/Modified/Removed (Month/Year) <sup>3</sup>		2014		2014		2014	
Engine Manufactured/Reconstruction Date <sup>4</sup>		2014		2014		2014	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart III? (Yes or No) <sup>5</sup>		Yes		Yes		Yes	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJ? (Yes or No) <sup>6</sup>		No		N/A		N/A	
Engine, Fuel and Combustion Data	Engine Type	4 Stroke		4 Stroke		4 Stroke	
	APCD Type <sup>8</sup>	N/A		N/A		N/A	
	Fuel Type <sup>9</sup>	No 2 Fuel Oil		No 2 Fuel Oil		No 2 Fuel Oil	
	H <sub>2</sub> S (gr/100 scf)	N/A		N/A		N/A	
	Operating bhp/rpm	22		22		65	
	BSFC (Btu/bhp-hr)	N/A		N/A		N/A	
	Fuel throughput (ft <sup>3</sup> /hr)	2		2		2	
	Fuel throughput (MMft <sup>3</sup> /yr)	1000		1000		1000	
	Operation (hrs/yr)	500		500		500	
Reference <sup>10</sup>	Potential Emissions <sup>11</sup>	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
	NO <sub>x</sub>	0.9300	0.233	0.9300	0.233	2.0150	0.504
	CO	0.2004	0.050	0.2004	0.050	0.4342	0.109
	VOC	0.0741	0.019	0.0741	0.019	0.1606	0.040
	SO <sub>2</sub>	0.0615	0.015	0.0615	0.015	0.1333	0.033
	PM <sub>10</sub>	0.066	0.017	0.066	0.017	0.1430	0.036
	Formaldehyde	0.00032	0	0.00032	0	0.0032	0
<p><b>The three generators (Numbers 4-5-6) listed above are small portable to power guard shacks and office trailer in event of power outage.</b></p>							

1. Enter the appropriate Source Identification Number for each reciprocating internal combustion compressor/generator engine located at the facility. Multiple compressor engines should be designated CE-1, CE-2, CE-3 etc. Emergency Generator engines should be designated EG-1, EG-2, EG-3 etc. If more than three (3) engines exist, please use additional sheets.

2. Enter the Source Status using the following codes:

NS	Construction of New Source (installation)	ES	Existing Source
MS	Modification of Existing Source	RS	Removal of Source

3. Enter the date (or anticipated date) of the engine's installation (construction of source), modification or removal.
4. Enter the date that the engine was manufactured, modified or reconstructed.

5. Is the engine a certified stationary compression ignition internal combustion engine according to 40CFR60 Subpart IIII. If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance according to 40CFR§60.4210 as appropriate.

**Provide a manufacturer's data sheet for all engines being registered.**

6. Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart JJJJ. If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance according to 40CFR§60.4243a(2)(i) through (iii), as appropriate.

**Provide a manufacturer's data sheet for all engines being registered.**

7. Enter the Engine Type designation(s) using the following codes:

LB2S	Lean Burn Two Stroke	RB4S	Rich Burn Four Stroke
LB4S	Lean Burn Four Stroke		

8. Enter the Air Pollution Control Device (APCD) type designation(s) using the following codes:

A/F	Air/Fuel Ratio	IR	Ignition Retard
HEIS	High Energy Ignition System	SIPC	Screw-in Precombustion Chambers
PSC	Prestratified Charge	LEC	Low Emission Combustion
NSCR	Rich Burn & Non-Selective Catalytic Reduction	SCR	Lean Burn & Selective Catalytic Reduction

9. Enter the Fuel Type using the following codes:

PQ	Pipeline Quality Natural Gas	RG	Raw Natural Gas
2FO	#2 Fuel Oil	LPG	Liquid Propane Gas

10. Enter the Potential Emissions Data Reference designation using the following codes. Attach all referenced data to this *Compressor/Generator Data Sheet(s)*.

MD	Manufacturer's Data	AP	AP-42	
GR	GRI-HAPCalc <sup>TM</sup>	OT	Other _____	(please list)

11. Enter each engine's Potential to Emit (PTE) for the listed regulated pollutants in pounds per hour and tons per year. PTE shall be calculated at manufacturer's rated brake horsepower and may reflect reduction efficiencies of listed Air Pollution Control Devices. Emergency generator engines may use 500 hours of operation when calculating PTE. PTE data from this data sheet shall be incorporated in the *Emissions Summary Sheet*.

[illegible]

- West Virginia Department of Environmental Protection • Division of Air Quality

**EMISSION SUMMARY SHEET FOR CRITERIA POLLUTANTS**

Registration Number (Agency Use) <b>G10-D</b>										
Source ID No.	Potential Emissions (lbs/hr)						Potential Emissions (tons/yr)			
	NO <sub>x</sub>	CO	VOC	SO <sub>2</sub>	PM <sub>10</sub>	NO <sub>x</sub>	CO	VOC	SO <sub>2</sub>	PM <sub>10</sub>
Transfer Points					8.81					34.86
Crush/Screen					13.0					56.94
Generator 1	7.6880	1.6566	0.6126	0.5084	0.5456	1.922	0.414	0.153	0.127	0.136
Generator 2	9.7030	2.0908	0.7731	0.6417	0.6886	2.426	0.523	0.193	0.160	0.172
Generator 3	5.8280	1.2558	0.4644	0.3854	0.4138	1.457	0.314	0.116	0.096	0.103
Generator 4	0.9300	0.2004	0.0741	0.0615	0.0660	0.233	0.042	0.019	0.015	0.017
Generator 5	0.9300	0.2004	0.0741	0.0615	0.0660	0.233	0.042	0.019	0.015	0.017
Generator 6	2.0150	0.4342	0.1606	0.1333	0.1430	0.504	0.109	0.040	0.033	0.036
	27.184	6.6554	2.1589	1.7918	24.0069	6.775	1.444	0.54	0.446	91.2134

<b>EMISSION SUMMARY SHEET FOR HAZARDOUS/TOXIC POLLUTANTS</b>													
										Registration Number (Agency Use) <b>G10-D</b>			
Potential Emissions (lbs/hr)										Potential Emissions (tons/yr)			
Source ID No.	Benzene	Acetaldehyde	Toluene	Xylenes	n-Hexane	Formaldehyde	Benzene	Acetaldehyde	Toluene	Xylenes	n-Hexane	Formaldehyde	
Gen Set - 1	0.00149	0.00122	0.00065	0.00045		0.00188	0.000371	0.000305	0.000163	0.000113		0.00047	
Gen Set - 2	0.00244	0.00201	0.000107	0.00075		0.00309	0.00061	0.000502	0.000268	0.000186		0.000772	
Gen Set - 3	0.00142	0.00117	0.00062	0.00043		0.0018	0.000356	0.000292	0.000156	0.000109		0.00045	
Gen Set - 4	0.00025	0.00021	0.00011	0		0.00032	0	0	0	0		0	
Gen Set - 5	0.00025	0.00021	0.00011	0		0.00032	0	0	0	0		0	
Gen Set - 6	0.00025	0.00021	0.00011	0		0.00032	0	0	0	0		0	
Total	0.0061	0.00503	0.001737	0.00163	NA	0.00773	0.001337	0.01099	0.00587	0.000408	NA	0.001692	

TERIA POLLUTANTS

AP-42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-1 for Diesel Fuel

	<b>185</b>	<b>kW</b>
Diesel Fuel Engine	<b>248</b>	<b>hp</b>
Max. Hours of Operation (8 hours/day, 5days/week, 12.5 weeks/year)	<b>500</b>	<b>hrs/year</b>
Heating Value for diesel	<b>128700</b>	<b>Btu/gal</b>

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
per 2000 lb

Pollutant		Emission Factor (lb/hp-hr)	Emission Factor (lb/MMBtu)	Rating	lb/hour	TPY
NOx	AP42	0.03100	4.41	D	7.6880	1.922
CO	AP42	0.00668	0.95	D	1.6566	0.414
SOx	AP42	0.00205	0.29	D	0.5084	0.127
PM/PM10	AP42	0.00220	0.31	D	0.5456	0.136
TOC	AP42	0.00247	0.35	D	0.6126	0.153



## HAZARDOUS AIR POLLUTANTS

12 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-2  
45CSR30 Table 45-30A Hazardous Air Pollutants

Diesel Fuel Engine	248	hp		
Max. Hours of Operation (8 hours/day, 5days/week, 12.5 weeks/year)	500	hours/year		
Heating Value for diesel	19000	Btu/lb		
	7.1	lb/gal		
Maximum diesel usage at 1800 rpm	134900	BTU/US gal		
	11.8	gal/hour		

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
per 2000 lb

		Emission Factor (lb/MMBtu)	Rating	lb/hour	TPY
CAS NO.					
71-43-2	Benzene	0.000933	E	0.00149	0.000371
108-88-3	Toluene	0.000409	E	0.00065	0.000163
	Xylenes	0.000285	E	0.00045	0.000113
	1,3-Butadiene	0.0000391	E	6.2E-05	1.56E-05
50-00-0	Formaldehyde	0.00118	E	0.00188	0.00047
	Acetaldehyde	0.000767	E	0.00122	0.000305
	Acrolein	0.0000925	E	0.00015	3.68E-05
91-20-3	Naphthalene	0.0000848	E	0.00013	3.37E-05
Burning diesel fuel:			<b>Total HAPs</b>	<b>0.00603</b>	<b>0.001508</b>
				<b>lb/hour</b>	<b>TPY</b>

**KANAWHA EAGLE****Emergency for Eagle Mine - Cat NGGWV 313 KVA****ID: 039-00480****CAT 9****TERIA POLLUTANTS**

AP-42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-1 for Diesel Fuel

	<b>250</b>	<b>kW</b>
Diesel Fuel Engine	<b>313</b>	<b>hp</b>
Max. Hours of Operation (8 hours/day, 5days/week, 12.5 weeks/year)	<b>500</b>	<b>hrs/year</b>
Heating Value for diesel	<b>128700</b>	<b>Btu/gal</b>

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
per 2000 lb

		<b>Emission Factor (lb/hp-hr)</b>	<b>Emission Factor (lb/MMBtu)</b>	<b>Rating</b>	<b>lb/hour</b>	<b>TPY</b>
<b>Pollutant</b>						
NOx	AP42	0.03100	4.41	D	9.7030	2.426
CO	AP42	0.00668	0.95	D	2.0908	0.523
SOx	AP42	0.00205	0.29	D	0.6417	0.160
PM/PM10	AP42	0.00220	0.31	D	0.6886	0.172
TOC	AP42	0.00247	0.35	D	0.7731	0.193

## HAZARDOUS AIR POLLUTANTS

2 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-2  
 45 CSR30 Table 45-30A Hazardous Air Pollutants

Diesel Fuel Engine	313	hp		
Max. Hours of Operation (8 hours/day, 5 days/week, 12.5 weeks/year)	500	hours/year		
Rating, based on EPA WebFIRE/AP-42 3.4-1 assumptions on diesel	19000	Btu/lb		
	7.1	lb/gal		
Heating Value for diesel	134900	BTU/US gal		
Maximum diesel usage at 1800 rpm	19.4	gal/hour		

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
 per 2000 lb

CAS NO.		Emission Factor (lb/MMBtu)	Rating	lb/hour	TPY
71-43-2	Benzene	0.000933	E	0.00244	0.00061
108-88-3	Toluene	0.000409	E	0.00107	0.000268
	Xylenes	0.000285	E	0.00075	0.000186
	1,3-Butadiene	0.0000391	E	0.0001	2.56E-05
50-00-0	Formaldehyde	0.00118	E	0.00309	0.000772
	Acetaldehyde	0.000767	E	0.00201	0.000502
	Acrolein	0.0000925	E	0.00024	6.05E-05
91-20-3	Naphthalene	0.0000848	E	0.00022	5.55E-05

Burning diesel fuel:	<b>Total HAPs</b>	<b>0.00992</b>	<b>0.00248</b>
		<b>lb/hour</b>	<b>TPY</b>

TERIA POLLUTANTS

AP-42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-1 for Diesel Fuel

	150	kW
Diesel Fuel Engine	188	hp
ax. Hours of Operation (8 hours/day, 5 days/week, 12.5 weeks/year)	500	hrs/year
Heating Value for diesel	128700	Btu/gal

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
per 2000 lb

Pollutant		Emission Factor (lb/hp-hr)	Emission Factor (lb/MMBtu)	Rating	lb/hour	TPY
NOx	AP42	0.03100	4.41	D	5.8280	1.457
CO	AP42	0.00668	0.95	D	1.2558	0.314
SOx	AP42	0.00205	0.29	D	0.3854	0.096
PM/PM10	AP42	0.00220	0.31	D	0.4136	0.103
TOC	AP42	0.00247	0.35	D	0.4644	0.116

## HAZARDOUS AIR POLLUTANTS

12 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-2  
45CSR30 Table 45-30A Hazardous Air Pollutants

Diesel Fuel Engine	188	hp		
Maximum Hours of Operation (8 hour/day, 5 days/week, 12.5 weeks/year)	500	hours/year		
Heating Value for diesel	19000	Btu/lb		
	7.1	lb/gal		
Maximum diesel usage at 1800 rpm	134900	BTU/US gal		
	11.3	gal/hour		

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
per 2000 lb

CAS NO.		Emission Factor (lb/MMBtu)	Rating	lb/hour	TPY
71-43-2	Benzene	0.000933	E	0.00142	0.000356
108-88-3	Toluene	0.000409	E	0.00062	0.000156
	Xylenes	0.000285	E	0.00043	0.000109
	1,3-Butadiene	0.0000391	E	6E-05	1.49E-05
50-00-0	Formaldehyde	0.00118	E	0.0018	0.00045
	Acetaldehyde	0.000767	E	0.00117	0.000292
	Acrolein	0.0000925	E	0.00014	3.53E-05
91-20-3	Naphthalene	0.0000848	E	0.00013	3.23E-05
Burning diesel fuel:			<b>Total HAPs</b>	<b>0.00578</b>	<b>0.001444</b>
				<b>lb/hour</b>	<b>TPY</b>

**KANAWHA EAGLE****Backup for Winifrede Gate - Cat XQ20-P2****ID: 039-00480****CAT 2.2****Small Portable****TERIA POLLUTANTS**

AP-42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-1 for Diesel Fuel

	<b>22</b>	<b>kW</b>
	<b>30</b>	<b>hp</b>
Max. Hours of Operation (8 hours/day, 5days/week, 12.5 weeks/year)	<b>500</b>	<b>hrs/year</b>
Heating Value for diesel	<b>128700</b>	<b>Btu/gal</b>

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
per 2000 lb

Pollutant		Emission Factor (lb/hp-hr)	Emission Factor (lb/MMBtu)	Rating	lb/hour	TPY
NOx	AP42	0.03100	4.41	D	0.9300	0.233
CO	AP42	0.00668	0.95	D	0.2004	0.050
SOx	AP42	0.00205	0.29	D	0.0615	0.015
PM/PM10	AP42	0.00220	0.31	D	0.0660	0.017
TOC	AP42	0.00247	0.35	D	0.0741	0.019

## HAZARDOUS AIR POLLUTANTS

12 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-2  
45CSR30 Table 45-30A Hazardous Air Pollutants

Diesel Fuel Engine	30	hp		
Max. Hours of Operation (8 hours/day, 5days/week, 12.5 weeks/year)	500	hours/year		
Rating, based on EPA WebFIRE/AP-42 3.4-1 assumptions on diesel	19000	Btu/lb		
	7.1	lb/gal		
Heating Value for diesel	134900	BTU/US gal		
Maximum diesel usage at 1800 rpm	2	gal/hour		

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
per 2000 lb

CAS NO.		Emission Factor (lb/MMBtu)	Rating	lb/hour	TPY
71-43-2	Benzene	0.000933	E	0.00025	6.29E-05
108-88-3	Toluene	0.000409	E	0.00011	2.76E-05
	Xylenes	0.000285	E	7.7E-05	1.92E-05
	1,3-Butadiene	0.0000391	E	1.1E-05	2.64E-06
50-00-0	Formaldehyde	0.00118	E	0.00032	7.96E-05
	Acetaldehyde	0.000767	E	0.00021	5.17E-05
	Acrolein	0.0000925	E	2.5E-05	6.24E-06
91-20-3	Naphthalene	0.0000848	E	2.3E-05	5.72E-06
Burning diesel fuel:			<b>Total HAPs</b>	<b>0.00102</b>	<b>0.000256</b>
				<b>lb/hour</b>	<b>TPY</b>

TERIA POLLUTANTS

AP-42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-1 for Diesel Fuel

	<b>22</b>	<b>kW</b>
Diesel Fuel Engine	<b>30</b>	<b>hp</b>
Max. Hours of Operation (8 hours/day, 5days/week, 12.5 weeks/year)	<b>500</b>	<b>hrs/year</b>
Heating Value for diesel	<b>128700</b>	<b>Btu/gal</b>

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
per 2000 lb

Pollutant		Emission Factor (lb/hp-hr)	Emission Factor (lb/MMBtu)	Rating	lb/hour	TPY
NOx	AP42	0.03100	4.41	D	0.9300	0.233
CO	AP42	0.00668	0.95	D	0.2004	0.050
SOx	AP42	0.00205	0.29	D	0.0615	0.015
PM/PM10	AP42	0.00220	0.31	D	0.0660	0.017
TOC	AP42	0.00247	0.35	D	0.0741	0.019



## HAZARDOUS AIR POLLUTANTS

12 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-2  
45CSR30 Table 45-30A Hazardous Air Pollutants

Diesel Fuel Engine	30	hp		
Max. Hours of Operation (8 hours/day, 5days/week, 12.5 weeks/year)	500	hours/year		
Rating, based on EPA WebFIRE/AP-42 3.4-1 assumptions on diesel	19000	Btu/lb		
	7.1	lb/gal		
Heating Value for diesel	134900	BTU/US gal		
Maximum diesel usage at 1800 rpm	2	gal/hour		

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
per 2000 lb

CAS NO.		Emission Factor (lb/MMBtu)	Rating	lb/hour	TPY
71-43-2	Benzene	0.000933	E	0.00025	6.29E-05
108-88-3	Toluene	0.000409	E	0.00011	2.76E-05
	Xylenes	0.000285	E	7.7E-05	1.92E-05
	1,3-Butadiene	0.0000391	E	1.1E-05	2.64E-06
50-00-0	Formaldehyde	0.00118	E	0.00032	7.96E-05
	Acetaldehyde	0.000767	E	0.00021	5.17E-05
	Acrolein	0.0000925	E	2.5E-05	6.24E-06
91-20-3	Naphthalene	0.0000848	E	2.3E-05	5.72E-06

Burning diesel fuel:

**Total HAPs** 0.00102 0.000256  
lb/hour TPY

**KANAWHA EAGLE****Backup for Plant Office - Cat XQ30-6****ID: 039-00480****CAT 2.2****TERIA POLLUTANTS**

AP-42 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-1 for Diesel Fuel

	<b>49</b>	<b>kW</b>
Diesel Fuel Engine	<b>65</b>	<b>hp</b>
Max. Hours of Operation (8 hours/day, 5days/week, 12.5 weeks/year)	<b>500</b>	<b>hrs/year</b>
Heating Value for diesel	<b>128700</b>	<b>Btu/gal</b>

E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
per 2000 lb

Pollutant		Emission Factor (lb/hp-hr)	Emission Factor (lb/MMBtu)	Rating	lb/hour	TPY
NOx	AP42	0.03100	4.41	D	2.0150	0.504
CO	AP42	0.00668	0.95	D	0.4342	0.109
SOx	AP42	0.00205	0.29	D	0.1333	0.033
PM/PM10	AP42	0.00220	0.31	D	0.1430	0.036
TOC	AP42	0.00247	0.35	D	0.1606	0.040

## HAZARDOUS AIR POLLUTANTS

12 5th Edition Section 3.3 Gasoline and Diesel Industrial Engines (10/96) - Table 3.3-2  
45CSR30 Table 45-30A Hazardous Air Pollutants

Diesel Fuel Engine	65	hp		
Max. Hours of Operation (8 hours/day, 5 days/week, 12.5 weeks/year)	500	hours/year		
Rating, based on EPA WebFIRE/AP-42 3.4-1 assumptions on diesel	19000	Btu/lb		
	7.1	lb/gal		
Heating Value for diesel	134900	BTU/US gal		
Maximum diesel usage at 1800 rpm	2	gal/hour		

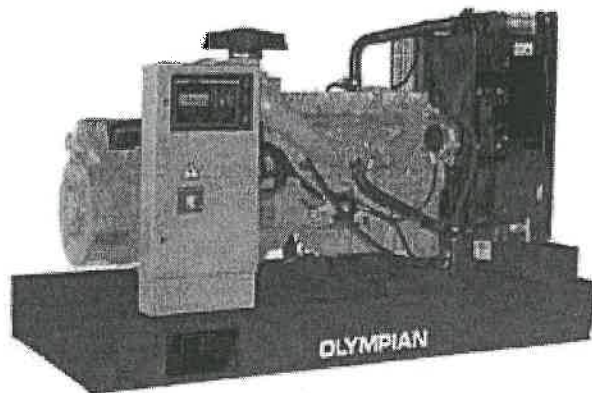
E (hourly) = Emission Factor (lb/hp-hr) \* Horse Power (hp)

E (annual) = Emission Factor (lb/hp-hr) \* Horse Power (hp) \* Maximum Hours of Operation \* 1 ton  
per 2000 lb

CAS NO.		Emission Factor (lb/MMBtu)	Rating	lb/hour	TPY
71-43-2	Benzene	0.000933	E	0.00025	6.29E-05
108-88-3	Toluene	0.000409	E	0.00011	2.76E-05
	Xylenes	0.000285	E	7.7E-05	1.92E-05
	1,3-Butadiene	0.0000391	E	1.1E-05	2.64E-06
50-00-0	Formaldehyde	0.00118	E	0.00032	7.96E-05
	Acetaldehyde	0.000767	E	0.00021	5.17E-05
	Acrolein	0.0000925	E	2.5E-05	6.24E-06
91-20-3	Naphthalene	0.0000848	E	2.3E-05	5.72E-06

Burning diesel fuel:	<b>Total HAPs</b>	<b>0.00102</b>	<b>0.000256</b>
		<b>lb/hour</b>	<b>TPY</b>

# OLYMPIAN™



## GEP200-4

Diesel Generator Set  
Exclusively from your Cat® dealer

EU Stage II Emissions Compliant

Image shown may not reflect actual package

Output Ratings		
Generating Set Model - 3 Phase	Prime*	Standby*
380-415V, 50Hz	180.0 kVA	200.0 kVA
	144.0 kW	160.0 kW
480V, 60 Hz	196.3 kVA	217.5 kVA
	157.0 kW	174.0 kW

\* Refer to ratings definitions on page 4.  
Ratings at 0.8 power factor.

Technical Data		
Engine Make & Model:	Perkins™1106C-E66TAG4	
Alternator Model:	LL5014D	
Control Panel:	PowerWizard 1.1	
Base Frame Type:	Heavy Duty Fabricated Steel	
Circuit Breaker Type:	3 Pole MCCB	
Frequency:	50 Hz	60 Hz
Engine Speed: RPM	1500	1800
Fuel Tank Capacity: litres (US gal)	418 (110.4)	
Fuel Consumption, Prime: l/hr (US gal/hr)	40.0 (10.6)	44.5 (11.8)
Fuel Consumption, Standby : l/hr (US gal/hr)	43.9 (11.6)	48.6 (12.8)

## Engine Technical Data

### Physical Data

Manufacturer:	Perkins
Model:	1106C-E66TAG4
No. of Cylinders/Alignment:	6 / In Line
Cycle:	4 Stroke
Induction:	Turbocharged Air To Air Charge Cooled
Cooling Method:	Water
Governing Type:	Electronic
Governing Class:	ISO 8528 G2
Compression Ratio:	16.2:1
Displacement: l (cu.in)	6.6 (402.8)
Bore/Stroke: mm (in)	105.0 (4.1)/127.0 (5.0)
Moment of Inertia: kg m <sup>2</sup> (lb. in <sup>2</sup> )	1.61 (5502)
Engine Electrical System:	
-Voltage/Ground:	12/Negative
-Battery Charger Amps:	10
Weight: kg (lb) - Dry:	788 (1737)
- Wet:	822 (1812)

### Air System 50 Hz 60 Hz

Air Filter Type:	Paper Element
Combustion Air Flow:	
m <sup>3</sup> /min (cfm)	-Standby: 11.7 (413) 13.4 (473)
	-Prime: 11.3 (399) 13.3 (470)
Max. Combustion Air Intake	
Restriction: kPa (in H <sub>2</sub> O)	8.0 (32.1) 8.0 (32.1)
Radiator Cooling Air Flow:	
m <sup>3</sup> /min (cfm)	309.0 (10912) 385.0 (13596)
External Restriction to	
Cooling Air Flow: Pa (in H <sub>2</sub> O)	125 (0.5) 125 (0.5)

### Cooling System 50 Hz 60 Hz

Cooling System Capacity:	
l (US gal)	27.0 (7.1) 27.0 (7.1)
Water Pump Type:	Centrifugal
Heat Rejected to Water & Lube Oil: kW (Btu/min)	
	-Standby: 79.8 (4538) 89.5 (5090)
	-Prime: 72.8 (4140) 82.2 (4675)
Heat Radiation to Room: Heat radiated from engine and alternator	
kW (Btu/min)	-Standby: 28.8 (1638) 31.4 (1786)
	-Prime: 25.4 (1444) 28.0 (1592)
Radiator Fan Load: kW (hp)	6.3 (8.5) 14.7 (19.7)

Cooling system designed to operate in ambient conditions up to 50°C (122°F). Contact your local Olympian™ dealer for power ratings at specific site conditions.

### Lubrication system

Oil Filter Type:	Spin-On, Full Flow
Total Oil Capacity l (US gal):	16.5 (4.4)
Oil Pan l (US gal):	15.5 (4.1)
Oil Type:	API CH4 / CI4 15W-40
Cooling Method:	Water

### Performance 50 Hz 60 Hz

Engine Speed: RPM	1500	1800
Gross Engine Power: kW (hp)		
-Standby:	180.5 (242.0)	204.3 (274.0)
-Prime:	163.7 (220.0)	185.3 (248.0)
BMEP: kPa (psi)		
-Standby:	2188.0 (317.4)	2064.0 (299.4)
-Prime:	1985.0 (287.9)	1872.0 (271.5)
Regenerative Power: kW	8.8	14.9

### Fuel System

<b>Fuel Filter Type:</b>	Replaceable Element			
<b>Recommended Fuel:</b>	Class A2 Diesel			
<b>Fuel Consumption: l/hr (US gal/hr)</b>				
	<b>110% Load</b>	<b>100% Load</b>	<b>75% Load</b>	<b>50% Load</b>
<b>Prime</b>				
50 Hz	43.9 (11.6)	40.0 (10.6)	30.7 (8.1)	20.8 (5.5)
60 Hz	48.6 (12.8)	44.5 (11.8)	35.5 (9.4)	27.3 (7.2)
<b>Standby</b>				
50 Hz		43.9 (11.6)	33.9 (9.0)	23.0 (6.1)
60 Hz		48.6 (12.8)	38.3 (10.1)	29.0 (7.7)

(based on diesel fuel with a specific gravity of 0.85 and conforming to BS2869, Class A2)

### Exhaust System 50 Hz 60 Hz

Silencer Type:	Industrial
Silencer Model & Quantity:	SD100 (1)
Pressure Drop Across	
Silencer System: kPa (in Hg)	2.14 (0.632) 0.54 (0.159)
Silencer Noise Reduction	
Level: dB	14 12
Max. Allowable Back	
Pressure: kPa (in. Hg)	10.0 (3.0) 15.0 (4.4)
Exhaust Gas Flow:	
m <sup>3</sup> /min (cfm)	-Standby: 31.0 (1095) 34.8 (1229)
	-Prime: 29.4 (1038) 33.4 (1180)
Exhaust Gas Temperature: °C (°F)	
-Standby:	499 (930) 509 (948)
-Prime:	480 (896) 485 (905)

## Alternator Performance Data

Data Item	50 Hz				60 Hz				
	415/240V	400/230V 230/115V 200/115V	380/220V 220/110V	220/127V	480/277V 240/139V	380/220V 220/110V	240/120V 208/120V	230/115V	440/254V 220/127V
Motor Starting Capacity* kVA	352	331	302	389	387	257	302	282	333
Short Circuit Capacity** %	300	300	300	300	300	300	300	300	300
Reactances: Per Unit									
Xd	2.890	3.110	3.440	2.280	2.820	4.460	3.750	4.050	3.360
X'd	0.146	0.158	0.175	0.116	0.144	0.230	0.190	0.210	0.171
X''d	0.088	0.095	0.105	0.069	0.086	0.136	0.114	0.123	0.102

Reactances shown are applicable to prime ratings.

\*Based on 30% voltage dip at 0.6 power factor and SHUNT excitation system.

\*\* With optional Permanent Magnet generator.

## Alternator Technical Data

Physical Data	
Manufactured for Olympian by:	OLYMPIAN
Model:	LL5014D
No. of Bearings:	1
Insulation Class:	H
Winding Pitch - Code:	2/3 - 6
Wires:	12
Ingress Protection Rating:	IP23
Excitation System:	SHUNT
AVR Model:	R250

Operating Data	
Overspeed: RPM	2250
Voltage Regulation: (steady state)	+/- 0.5%
Wave Form NEMA = TIF:	50
Wave Form IEC = THF:	2.0%
Total Harmonic Content LL/LN:	4.0%
Radio Interference:	Supression is in line with European Standard EN61000-6
Radiant Heat: kW (Btu/min)	
-50 Hz:	15.1 (859)
-60 Hz:	15.7 (893)

## Technical Data

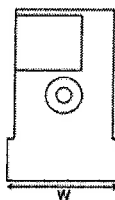
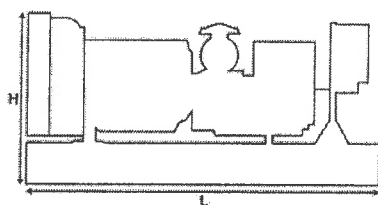
Voltage 50 Hz	Prime		Standby	
	kVA	kW	kVA	kW
415/240V	180.0	144.0	198.0	158.4
400/230V	180.0	144.0	200.0	160.0
380/220V	180.0	144.0	200.0	160.0
230/115V	180.0	144.0	200.0	160.0
220/127V	160.0	128.0	176.0	140.8
220/110V	180.0	144.0	200.0	160.0
200/115V	180.0	144.0	200.0	160.0

Voltage 60 Hz	Prime		Standby	
	kVA	kW	kVA	kW
480/277V	196.3	157.0	217.5	174.0
220/127V	196.3	157.0	217.5	174.0
380/220V	194.6	155.7	215.1	172.1
240/120V	196.0	156.8	217.0	173.6
230/115V	196.0	156.8	217.0	173.6
440/254V	195.6	156.5	216.4	173.1
220/110V	194.6	155.7	215.1	172.1
208/120V	196.3	157.0	217.5	174.0
240/139V	196.0	156.8	217.0	173.6

## Weights & Dimensions

Weights: kg (lb)	
Net (+ lube oil)	1691 (3728)
Wet (+ lube oil & coolant)	1718 (3788)
Fuel, lube oil & coolant	2072 (4568)

Dimensions: mm (in)	
Length	2500 (98.4)
Width	1320 (52.0)
Height	1626 (64.0)



**Note:** General configuration not to be used for installation. See general dimension drawings for detail.

## Definitions

### Standby Rating

These ratings are applicable for supplying continuous electrical power (at variable load) in the event of a utility power failure. No overload is permitted on these ratings. The alternator on this model is peak continuous rated (as defined in ISO 8528-3).

### Prime Rating

These ratings are applicable for supplying continuous electrical power (at variable load) in lieu of commercially purchased power. There is no limitation to the annual hours of operation and this model can supply 10% overload power for 1 hour in 12 hours.

### Standard Reference Conditions

Note: Standard reference conditions 25°C (77°F) air inlet temp, 100m (328ft) A.S.L. 30% relative humidity. Fuel consumption data at full load with diesel fuel with specific gravity of 0.85 and conforming to BS2869: 1998, Class A2.

## General Data

### Documents

A full set of operation and maintenance manuals and circuit wiring diagrams.

### Quality Standards

The equipment meets the following standards: BS5000, ISO 8528, ISO 3046, IEC 60034, NEMA MG-1.22.

### Warranty

All prime equipment carries a one year manufacturer's warranty. Standby equipment, limited to 500 running hours per year, has a two year manufacturer's warranty. For details on warranty cover please contact your local Dealer, or visit our website: [www.OlympianPower.com](http://www.OlympianPower.com).

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## DIESEL GENERATOR SET

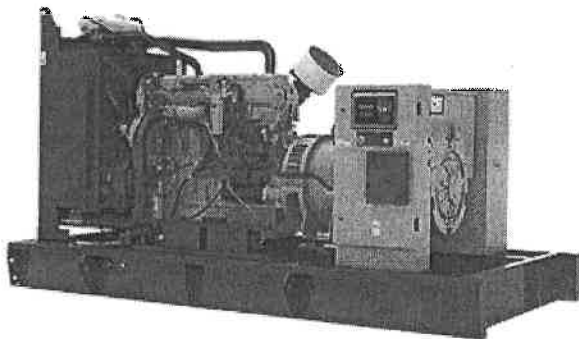


Image shown may not reflect actual package.

**STANDBY**  
**250 ekW 313 kVA**  
60 Hz 1800 rpm 480 Volts

Caterpillar is leading the power generation marketplace with Power Solutions engineered to deliver unmatched flexibility, expandability, reliability, and cost-effectiveness.

## FEATURES

### FUEL/EMISSIONS STRATEGY

- EPA Certified for Stationary Emergency Application (Emits Equivalent U.S. EPA Tier 3 Nonroad Standards)

### DESIGN CRITERIA

- The generator set accepts 100% rated load in one step per NFPA 110 and meets ISO 8528-5 transient response
- Cooling system designed to operate in 50°C / 122°F ambient temperatures with an air flow restriction of 0.5 in. water

### UL 2200 / CSA – Optional

- UL 2200 Listed
- CSA Certified

Certain restrictions may apply.  
Consult with your Cat® Dealer.

### FULL RANGE OF ATTACHMENTS

- Wide range of bolt-on system expansion attachments, factory designed and tested
- Flexible packaging options for easy and cost effective installation

### SINGLE-SOURCE SUPPLIER

- Fully prototype tested with certified torsional vibration analysis available

### WORLDWIDE PRODUCT SUPPORT

- Cat dealers provide extensive post sale support including maintenance and repair agreements
- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- The Cat S•O•S<sup>SM</sup> program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products

### CAT C9 ATAAC DIESEL ENGINE

- Utilizes ACERT™ Technology
- Reliable, rugged, durable design
- Field-proven in thousands of applications worldwide
- Four-stroke-cycle diesel engine combines consistent performance and excellent fuel economy with minimum weight
- Electronic controlled governor

### CAT GENERATOR

- Matched to the performance and output characteristics of Cat engines
- UL 1446 Recognized Class H insulation
- CSA Certified

### CAT EMCP 4 CONTROL PANELS

- Simple user friendly interface and navigation
- Scalable system to meet a wide range of customer needs
- Integrated Control System and Communications Gateway
- Integrated Voltage Regulation

### SEISMIC CERTIFICATION\*

- Seismic Certification available
- Anchoring details are site specific, and are dependent on many factors such as generator set size, weight and concrete strength.  
IBC Certification requires that the anchoring system used is reviewed and approved by a Professional Engineer
- Seismic Certification per Applicable Building Codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, IBC 2012, CBC 2007, CBC 2010

\*Not available with some options – consult with your Cat Dealer.



**STANDBY 250 kW 313 kVA**  
60 Hz 1800 rpm 480 Volts



**FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT**

System	Standard	Optional
Air Inlet	<ul style="list-style-type: none"> <li>• Disposable air filter</li> </ul>	<input type="checkbox"/> Canister type, dual element <input type="checkbox"/> Heavy duty air cleaner
Cooling	<ul style="list-style-type: none"> <li>• Package mounted radiator</li> </ul>	
Exhaust	<ul style="list-style-type: none"> <li>• Exhaust flange outlet</li> </ul>	<input type="checkbox"/> Industrial <input type="checkbox"/> Residential / Critical
Fuel	<ul style="list-style-type: none"> <li>• Primary fuel filter with integral water separator</li> <li>• Secondary fuel filters</li> <li>• Fuel priming pump</li> </ul>	
Generator	<ul style="list-style-type: none"> <li>• Matched to the performance and output characteristics of Cat engines</li> <li>• IP23 Protection</li> </ul>	<input type="checkbox"/> Permanent magnet excitation (PMG) <input type="checkbox"/> Anti-condensation space heater <input type="checkbox"/> Coastal insulation protection <input type="checkbox"/> Internal excitation (IE) / AREP
Power Termination	<ul style="list-style-type: none"> <li>• Power terminal strips</li> </ul>	<input type="checkbox"/> Circuit breakers – 100% rated assembly, UL Listed <input type="checkbox"/> SUSE (Suitable for use as service equipment)
Control Panels	<ul style="list-style-type: none"> <li>• EMCP 4.2</li> </ul>	<input type="checkbox"/> EMCP 4.3 <input type="checkbox"/> EMCP 4.4 <input type="checkbox"/> Local and remote annunciator modules <input type="checkbox"/> Remote monitoring software
Mounting	<ul style="list-style-type: none"> <li>• Rubber vibration isolators</li> </ul>	
Starting/Charging	<ul style="list-style-type: none"> <li>• 24 volt starting motor &amp; charging alternator</li> <li>• Batteries</li> </ul>	<input type="checkbox"/> Battery chargers <input type="checkbox"/> Oversize batteries <input type="checkbox"/> Jacket water heater
General	<ul style="list-style-type: none"> <li>• Paint – Caterpillar Yellow except rails and radiators gloss black</li> <li>• Narrow skid base</li> </ul>	<p>The following options are based on regional and product configuration:</p> <input type="checkbox"/> Seismic Certification per Applicable Building Codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, IBC 2012, CBC 2007, CBC 2010 <input type="checkbox"/> UL 2200 Listed package <input type="checkbox"/> CSA Certified <input type="checkbox"/> Wide skid base <input type="checkbox"/> Sound attenuated enclosure <input type="checkbox"/> Weather protective enclosure <input type="checkbox"/> Integral dual wall UL Listed 8 hr fuel tank <input type="checkbox"/> Sub-base dual wall UL Listed 24 hr fuel tank <input type="checkbox"/> Sub-base dual wall UL Listed 48 hr fuel tank

# STANDBY 250 ekW 313 kVA

60 Hz 1800 rpm 480 Volts



## SPECIFICATIONS

STANDARD CAT GENERATOR	
Frame size	LC5014H
Excitation	Self Excitation
Pitch	0.6667
Number of poles	4
Number of bearings	Single bearing
Number of leads	12
Insulation	UL 1446 Recognized Class H
IP Rating	IP23
Alignment	Pilot shaft
Overspeed capability (%)	125
Wave form deviation (%)	2
Voltage regulator	Three phase sensing
Voltage regulation	+/- 0.25% (steady state)
- Consult your Cat dealer for available voltages	
CAT DIESEL ENGINE	
C9 ATAAC, I-6, 4-Stroke Water-cooled Diesel	
Bore	112.00 mm (4.41 in)
Stroke	149.00 mm (5.87 in)
Displacement	8.80 L (537.01 in <sup>3</sup> )
Compression ratio	16.1:1
Aspiration	Air-to-air aftercooled
Fuel system	Hydraulic electronic unit injection
Governor type	Caterpillar ADEM™ control system

## CAT EMCP 4 SERIES CONTROLS

EMCP 4 controls including:

- Run / Auto / Stop Control
- Speed and Voltage Adjust
- Engine Cycle Crank
- 24-volt DC operation
- Environmental sealed front face
- Text alarm/event descriptions

Digital indication for:

- RPM
- DC volts
- Operating hours
- Oil pressure (psi, kPa or bar)
- Coolant temperature
- Volts (L-L & L-N), frequency (Hz)
- Amps (per phase & average)
- ekW, kVA, kVAR, kW-hr, %kW, PF (4.2 only)

Warning/shutdown with common LED indication of:

- Low oil pressure
- High coolant temperature
- Overspeed
- Emergency stop
- Failure to start (overcrank)
- Low coolant temperature
- Low coolant level

Programmable protective relaying functions:

- Generator phase sequence
- Over/Under voltage (27/59)
- Over/Under Frequency (81 o/u)
- Reverse Power (kW) (32) (4.2 only)
- Reverse reactive power (kVAr) (32RV)
- Overcurrent (50/51)

Communications:

- Four digital inputs (4.1)
- Six digital inputs (4.2 only)
- Four relay outputs (Form A)
- Two relay outputs (Form C)
- Two digital outputs
- Customer data link (Modbus RTU) (4.2 only)
- Accessory module data link (4.2 only)
- Serial annunciator module data link (4.2 only)
- Emergency stop pushbutton

Compatible with the following:

- Digital I/O module
- Local Annunciator
- Remote CAN annunciator
- Remote serial annunciator

# STANDBY 250 ekW 313 kVA

60 Hz 1800 rpm 480 Volts



## TECHNICAL DATA

Open Generator Set - - 1800 rpm/60 Hz/480 Volts		DM8501
EPA Certified for Stationary Emergency Application (Emits Equivalent U.S. EPA Tier 3 Nonroad Standards)		
Generator Set Package Performance Genset power rating @ 0.8 pf Genset power rating with fan		313 kVA 250 ekW
Fuel Consumption 100% load with fan 75% load with fan 50% load with fan	73.3 L/hr 58.8 L/hr 43.8 L/hr	19.4 gal/hr 15.5 gal/hr 11.6 gal/hr
Cooling System <sup>1</sup> Air flow restriction (system) Air flow (max @ rated speed for radiator arrangement) Engine coolant capacity with radiator/exp. tank Engine coolant capacity Radiator coolant capacity	0.12 kPa 600 m³/min 46.7 L 22.0 L 24.7 L	0.48 in. water 21189 cfm 12.3 gal 5.8 gal 6.5 gal
Inlet Air Combustion air inlet flow rate	25.2 m³/min	890 cfm
Exhaust System Exhaust stack gas temperature Exhaust gas flow rate Exhaust flange size (internal diameter) Exhaust system backpressure (maximum allowable)	456°C 63.6 m³/min 127.0 mm 10.0 kPa	852°F 2246 cfm 5.0 in 40.1 in. water
Heat Rejection Heat rejection to coolant (total) Heat rejection to exhaust (total) Heat rejection to aftercooler Heat rejection to atmosphere from engine Heat rejection to atmosphere from generator	104 kW 277 kW 82 kW 18 kW 19.7 kW	5914 Btu/min 15753 Btu/min 4663 Btu/min 1024 Btu/min 1120 Btu/min
Alternator <sup>2</sup> Motor starting capability @ 30% voltage dip Frame Insulation class Temperature rise	543 skV LC5014H H 150°C	270°F
Lubrication System Sump refill with filter	39.0 L	10.3 gal
Emissions (Nominal) <sup>3</sup> NOx g/hp-hr CO g/hp-hr HC g/hp-hr PM g/hp-hr	2.91 g/hp-hr 0.37 g/hp-hr 0.09 g/hp-hr 0.081 g/hp-hr	

<sup>1</sup> For site specific ambient and altitude capabilities consult your Cat dealer. Air flow restriction (system) is added to existing restriction from factory.

<sup>2</sup> Generator temperature rise is based on a 40° C (104° F) ambient per NEMA MG1-32.

<sup>3</sup> Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO 8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77°F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 btu/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

# STANDBY 250 ekW 313 kVA

60 Hz 1800 rpm 480 Volts



## RATING DEFINITIONS AND CONDITIONS

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### Applicable Codes and Standards:

AS1359, CSA C22.2 No100-04, UL142,UL489, UL869, UL2200, NFPA37, NFPA70, NFPA99, NFPA110, IBC, IEC60034-1, ISO3046, ISO8528, NEMA MG1-22,NEMA MG1-33, 72/23/EEC, 98/37/EC, 2004/108/EC.

**Standby** – Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

**Ratings** are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions.

**Fuel Rates** are based on fuel oil of 35° API (16°C or 60°F) gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29°C (85°F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.).

**Additional Ratings** may be available for specific customer requirements. Consult your Cat representative for details.

# STANDBY 250 ekW 313 kVA

60 Hz 1800 rpm 480 Volts



## DIMENSIONS

Package Dimensions		
Length	2870 mm	113.0 in
Width	1622 mm	63.9 in
Height	2065 mm	81.3 in
Weight*	2106 kg	4643 lb

\*With Oil and Coolant.

**NOTE:** For reference only – do not use for installation design. Please contact your local dealer for exact weight and dimensions.

Performance No.: DM8501

Feature Code: C09DE47

Gen. Arr. Number: 449-0571

Source: U.S. Sourced

LEHE0489-00 (02/14)

[www.Cat-ElectricPower.com](http://www.Cat-ElectricPower.com)

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## DIESEL GENERATOR SET

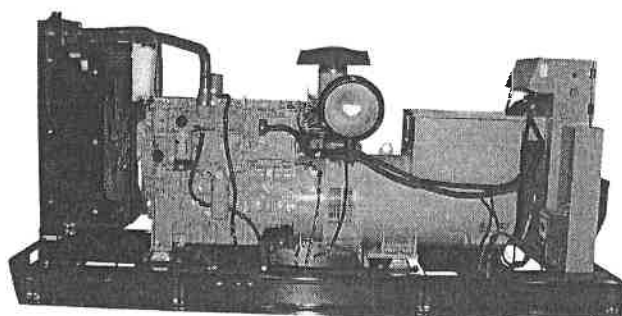


Image shown may not reflect actual package.

**STANDBY**  
**150 ekW 188 kVA**

**PRIME**  
**135 ekW 169 kVA**  
**60 Hz 1800 rpm 480 Volts**

Caterpillar is leading the power generation marketplace with Power Solutions engineered to deliver unmatched flexibility, expandability, reliability, and cost-effectiveness.

### FEATURES

#### FUEL/EMISSIONS STRATEGY

- EPA Certified for Stationary Emergency Application (EPA Tier 3 emissions levels)

#### FULL RANGE OF ATTACHMENTS

- Wide range of bolt-on system expansion attachments, factory designed and tested
- Flexible packaging options for easy and cost effective installation

#### SINGLE-SOURCE SUPPLIER

- Fully prototype tested with certified torsional vibration analysis available

#### WORLDWIDE PRODUCT SUPPORT

- Cat dealers provide extensive post sale support including maintenance and repair agreements
- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- The Cat S•O•S<sup>SM</sup> program cost effectively detects internal engine component condition, even the presence of unwanted fluids and combustion by-products

#### Cat® Model D150-8, Three Phase CAT C6.6 DIESEL ENGINE

- Reliable, rugged, durable design
- Field-proven in thousands of applications worldwide
- Four-stroke diesel engine combines consistent performance and excellent fuel economy with minimum weight
- Electronic engine control

#### GENERATOR SET

- Complete system designed and built at ISO 9001 certified facilities
- Factory tested to design specifications at full load conditions

#### CAT EMCP 4 CONTROL PANELS

- Simple user friendly interface and navigation
- Scalable system to meet a wide range of customer needs
- Integrated Control System and Communications Gateway

#### SEISMIC CERTIFICATION

- Seismic Certification available
- Anchoring details are site specific, and are dependent on many factors such as generator set size, weight, and concrete strength. IBC Certification requires that the anchoring system used is reviewed and approved by a Professional Engineer
- Seismic Certification per Applicable Building codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, IBC 2012, CBC 2007, CBC 2010
- Pre-approved by OSHPD and carries an OSP-0321-10 for use in healthcare projects in California

**STANDBY 150 ekW 188 kVA**

**PRIME 135 ekW 169 kVA**

60 Hz 1800 rpm 480 Volts



## FACTORY INSTALLED STANDARD & OPTIONAL EQUIPMENT

System	Standard	Optional
Air Inlet	<ul style="list-style-type: none"> <li>• Dry replaceable paper element type with restriction indicator</li> </ul>	
Cooling	<ul style="list-style-type: none"> <li>• Radiator and cooling fan complete with protective guards</li> <li>• Standard ambient temperatures up to 50°C (122°F)</li> </ul>	<input type="checkbox"/> Radiator stone guard <input type="checkbox"/> Radiator transition flange
Exhaust		<input type="checkbox"/> Industrial <input type="checkbox"/> Residential <input type="checkbox"/> Critical mufflers <input type="checkbox"/> Overhead silencer mounting kit
Fuel	<ul style="list-style-type: none"> <li>• Flexible fuel lines to base with NPT connections</li> </ul>	<input type="checkbox"/> Sub-base dual wall UL listed 24 hr fuel tank <input type="checkbox"/> Sub-base dual wall UL listed 48 hr fuel tank <input type="checkbox"/> Emergency vent 12ft extension <input type="checkbox"/> 5 gallon spill containment
Generator	<ul style="list-style-type: none"> <li>• Class H insulation</li> <li>• Drip proof generator air intake (NEMA 2, IP23)</li> <li>• Electrical design in accordance with BS5000 Part 99, EN61000-6, IEC60034-1, NEMA MG-1.33</li> <li>• IP23 Protection</li> </ul>	<input type="checkbox"/> Generator upgrade 1 size <input type="checkbox"/> Permanent magnet excitation <input type="checkbox"/> Internal excitation <input type="checkbox"/> Anti-condensation space heater
Power Termination	<ul style="list-style-type: none"> <li>• Circuit breakers, UL/CSA listed, 3 pole (100% rated)</li> <li>• Power center houses EMCP controller and control terminations (CB)</li> <li>• Segregated low voltage wiring termination panel</li> <li>• NEMA 1 steel enclosure, vibration isolated</li> <li>• Electrical stub-up area directly below circuit breaker</li> </ul>	<input type="checkbox"/> Auxiliary contacts <input type="checkbox"/> Shunt trip <input type="checkbox"/> Overload shutdown via breaker
Governor	<ul style="list-style-type: none"> <li>• ADEM™A4</li> </ul>	
Control Panels	<ul style="list-style-type: none"> <li>• EMCP 4.2 digital control panel</li> <li>• Vibration isolated NEMA 1 enclosure with lockable hinged door</li> <li>• DC and AC Wiring harnesses</li> </ul>	<input type="checkbox"/> NFPA110 upgrade <input type="checkbox"/> Control panel chassis
Lube		<input type="checkbox"/> Lube oil heater
Mounting	<ul style="list-style-type: none"> <li>• Heavy-duty fabricated steel base with lifting points</li> <li>• Anti-vibration pads to ensure vibration isolation</li> <li>• Complete OSHA guarding</li> <li>• Stub-up pipe ready for connection to silencer pipework</li> </ul>	<input type="checkbox"/> IBC Seismic and OSHPD certification per Applicable Building Codes: IBC2000, IBC2003, IBC2006, IBC 2009, IBC 2012, CBC 2007, CBC 2010
Starting/Charging	<ul style="list-style-type: none"> <li>• 12 volt starting motor</li> <li>• Batteries with rack and cables</li> </ul>	<input type="checkbox"/> Battery charger – UL 10 amp <input type="checkbox"/> Battery disconnect switch <input type="checkbox"/> Battery removal (does not remove rack and cables) <input type="checkbox"/> Coolant Heater
General	<ul style="list-style-type: none"> <li>• High gloss polyurethane paint, Caterpillar Yellow except rails and radiators gloss black</li> <li>• Anticorrosive paint protection</li> <li>• All electroplated hardware</li> </ul>	<input type="checkbox"/> CSA Certified <input type="checkbox"/> Weather protective enclosure Industrial/Critical <input type="checkbox"/> Sound attenuated protective enclosure <input type="checkbox"/> Caterpillar tool set <input type="checkbox"/> Caterpillar White paint



**STANDBY 150 kW 188 kVA**  
**PRIME 135 kW 169 kVA**  
 60 Hz 1800 rpm 480 Volts



**SPECIFICATIONS**

STANDARD CAT GENERATOR		
Frame size	LC3014H	
Excitation	Self excitation	
Pitch	0.6667	
Number of poles	4	
Number of bearings	Single bearing	
Number of leads	12	
Insulation	Class H	
IP Rating	IP23	
Overspeed capability (%)	125	
Wave form deviation (%)	2	
Voltage regulator	Single phase sensing	
Voltage regulation	+/- 0.5% (steady state)	
Additional Voltage Information:		
Three Phase	Prime	Standby
08V Temp Rise	125°C / 225°F	150°C / 270°F
240V Temp Rise	125°C / 225°F	150°C / 270°F
480V Temp Rise	105°C / 189°F	130°C / 234°F
600V Temp Rise	105°C / 189°F	130°C / 234°F
- Consult your Cat dealer for other available voltages		
CAT DIESEL ENGINE		
C6.6 In-line 6, 4-cycle diesel		
Bore	105.0 mm (4,13 in)	
Stroke	127.0 mm (5.0 in)	
Displacement	6.6 L (402.8 in³)	
Compression ratio	16,2:1	
Aspiration	T	
Fuel system	Common rail	
Governor type	Electronic	
EMISSIONS (Nominal)		
NOx + HC g/kWhr	3.75	
CO g/kWhr	0.78	
PM g/kWhr	0.18	

\*The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load.

**CAT EMCP 4 SERIES CONTROLS**

EMCP 4 controls including:

- Run / Auto / Stop Control
- Speed and Voltage Adjust
- Engine Cycle Crank
- 12 volt DC operation
- Environmental sealed front face
- Text alarm/event descriptions

Digital indication for:

- RPM
- DC volts
- Operating hours
- Oil pressure (psi, kPa or bar)
- Coolant temperature
- Volts (L-L & L-N), frequency (Hz)
- Amps (per phase & average)
- kW, kVA, kVAR, kW-hr, %kW, PF

Warning/shutdown with common LED indication of:

- Low oil pressure
- High coolant temperature
- Overspeed
- Emergency stop
- Failure to start (overcrank)
- Low coolant temperature
- Low coolant level

Programmable protective relaying functions:

- Generator phase sequence
- Over/Under voltage (27/59)
- Over/Under frequency (81 o/u)
- Reverse power (kW) (32)
- Reverse reactive power (kVAR) (32RV)
- Overcurrent (50/51)

Communications:

- Six digital inputs
- Four relay outputs (Form A)
- Two relay outputs (Form C)
- Two digital outputs
- Customer data link (Modbus RTU)
- Accessory module data link
- Serial annunciator module data link
- Emergency stop pushbutton

Compatible with the following:

- Digital I/O module
- Local annunciator
- Remote CAN annunciator
- Remote serial annunciator



**STANDBY 150 ekW 188 kVA**  
**PRIME 135 ekW 169 kVA**  
60 Hz 1800 rpm 480 Volts



**TECHNICAL DATA**

Open Generator Set – 1800 rpm/60 Hz/480 Volts		P2682A		
Tier 3		Standby		Prime
<b>Generator Set Package Performance</b> Genset power rating @ 0.8 pf Genset power rating with fan		187.5 kVA 150.0 ekW		168.8 kVA 135.0 ekW
<b>Fuel Consumption</b> 100% load with fan 75% load with fan 50% load with fan		42.8 L/hr 34.2 L/hr 24.9 L/hr	11.3 gal/hr 9.0 gal/hr 6.6 gal/hr	39.4 L/hr 31.4 L/hr 23.0 L/hr 10.4 gal/hr 8.3 gal/hr 6.1 gal/hr
<b>Cooling System<sup>1</sup></b> Air flow restriction (system) Engine coolant capacity with radiator/exp. tank Engine coolant capacity Radiator coolant capacity		0.12 kPa 21.0 L 9.5 L 11.5 L	0.48 in. water 5.5 gal 2.5 gal 3.0 gal	0.12 kPa 21.0 L 9.5 L 11.5 L 0.48 in. water 5.5 gal 2.5 gal 3.0 gal
<b>Inlet Air</b> Combustion air inlet flow rate		12.7 m <sup>3</sup> /min	441.4 cfm	12.4 m <sup>3</sup> /min 441.4 cfm
<b>Exhaust System</b> Exhaust stack gas temperature Exhaust gas flow rate Exhaust flange size (internal diameter) Exhaust system back pressure (maximum)		469°C 30.7 m <sup>3</sup> /min 89.0 mm 16.0 kPa	876°F 1084 cfm 3.5 in 60.2 in. water	455.2°C 29.5 m <sup>3</sup> /min 89.0 mm 15.0 kPa 851°F 1042 cfm 3.5 in 60.2 in. water
<b>Heat Rejection</b> Heat rejection to coolant (total) Heat rejection to exhaust (total) Heat rejection to aftercooler Heat rejection to atmosphere from engine Heat rejection to atmosphere from generator		80.1 kW 135.9 kW 35.0 kW 13.5 kW 11.5 kW	4555 Btu/min 7729 Btu/min 1990 Btu/min 767.7 Btu/min 654 Btu/min	74.2 kW 127.3 kW 32.5 kW 12.4 kW 10.1 kW 4220 Btu/min 7239 Btu/min 1848 Btu/min 705.2 Btu/min 574.4 Btu/min
<b>Alternator<sup>2</sup></b> Motor starting capability @ 30% voltage dip Frame Temperature rise		420 skV LC3014F 130°C	234°F	420 skV LC3014F 105°C 189°F
<b>Lubrication System</b> Total oil capacity Oil pan		16.5 L 15.5 L	4.4 gal 4.1 gal	16.5 L 15.5 L 4.4 gal 4.1 gal

<sup>1</sup>For ambient and altitude capabilities consult your Cat dealer. Airflow restriction (system) is added to existing restriction from factory.

<sup>2</sup>Generator temperature rise is based on a 40°C (104°F) ambient per NEMA MG1-32.

**STANDBY 150 kW 188 kVA**  
**PRIME 135 kW 169 kVA**  
60 Hz 1800 rpm 480 Volts



## **RATING DEFINITIONS AND CONDITIONS**

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**Applicable Codes and Standards:** AS1359, CSA C22.2 No 100-04, UL142, UL489, UL601, UL869, UL2200, NFPA 37, NFPA 70, NFPA 99, NFPA 110, IBC, IEC60034-1, ISO3046, ISO8528, NEMA MG 1-22, NEMA MG 1-33, 72/23/EEC, 98/37/EC, 2004/108/EC.

**Standby** – Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

**Prime** – Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand of 100% of prime-rated kW with 10% of overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year.

**Ratings** are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions.

**Fuel rates** are based on fuel oil to specification EPA 2D 89.330-96 with a density of 0.845 – 0.850 kg/L (7.052 – 7.094 lbs/U.S. gal.) @ 15°C (59°F) and fuel inlet temperature 40°C (104°F). Additional ratings may be available for specific customer requirements, contact your Cat representative for details. For information regarding Low Sulfur fuel and Biodiesel capability, please consult your Cat dealer.

**STANDBY 150 ekW 188 kVA**  
**PRIME 135 ekW 169 kVA**  
60 Hz 1800 rpm 480 Volts



## DIMENSIONS

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Package Dimensions		
Length	3937 mm	120 in
Width	1110 mm	44 in
Height	483 mm	58 in

**NOTE:** For reference only – do not use for installation design. Please contact your local dealer for exact weight and dimensions. (General Dimension Drawing #4190061).

Performance No.: P2682A

[www.Cat-ElectricPower.com](http://www.Cat-ElectricPower.com)

Feature Code: NAC137P

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Gen. Arr. Number: 3932548

Source: U.S. Sourced

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## XQ20-2 STANDBY PRIME

**20 kW**  
**18 kW**

**60 Hz**

Voltage	Standby kW (kVA)	Prime kW (kVA)
208/120V 3 PH	20 (25)	18 (22.5)
480/277V 3 PH	20 (25)	18 (22.5)
240/120V 1 PH	17 (17)	15 (15)

### FEATURES

#### GENERATOR SET

- Heavy duty industrial Tier 2 EPA approved emissions certified diesel engine
- Complete system designed and built at ISO 9001 certified facility
- Factory tested to design specifications at full load conditions

#### ENGINE

- Governor, mechanical
- Electrical system, 12V DC
- Cartridge type filters
- Fuel/water separator
- Battery rack and cables

#### GENERATOR

- Insulation system, class H
- Screen protected and drip-proof, self exciting, self-regulating with fully interconnected damper windings, IC06 cooling system and sealed-for-life bearings
- Electrical design in accordance with BS5000 Part 99, IEC60034-1, EN61000-6, NEMA MG-1.22

#### CONTROL SYSTEM

- Manual/Autostart control panel
- Vibration isolated, NEMA 1 enclosure with lockable hinged door
- DC and AC wiring harnesses

#### MULTI-VOLTAGE DISTRIBUTION PANEL

- Switchable voltage output:
  - 480/277V 3 phase
  - 208/120V 3 phase
  - 240/120V 1 phase
- Convenience receptacles
- Hinged door over main connectors

#### MOUNTING ARRANGEMENT

- Heavy-duty fabricated steel base raised for forklift access
- Anti-Vibration mounting pads
- Complete OSHA guarding
- Three-way valves to allow connection of auxiliary fuel tank
- UL listed double walled fuel tank base with 24 hour minimum fuel supply.
- Containment area for oil, coolant and fuel spill.

#### SOUND ATTENUATED ENCLOSURE

- Fully weatherproof sound attenuated enclosure with internal exhaust silencer
- Highly corrosion resistant construction
  - Body made from sheet steel components pretreated with zinc phosphate prior to polyester powder coating at 200° C (392° F)

#### CIRCUIT BREAKER

- UL/CSA (mainline) listed
- 3-pole with solid neutral
- NEMA 1 steel enclosure, vibration isolated

**XQ20-2  
STANDBY  
PRIME  
60 Hz**

**20 kW  
18 kW**

**CATERPILLAR®**

## **FEATURES (CONT'D)**

### **AUTOMATIC VOLTAGE REGULATOR**

- Voltage within the limits of  $\pm 0.5\%$  for 3 Phase and  $\pm 1\%$  for Single Phase operation at steady state from no load to full load

### **EQUIPMENT FINISH**

- All electroplated hardware
- Anti-corrosive protection prior to painting
- High gloss polyurethane paint for durability and scuff resistance

### **QUALITY STANDARDS**

- BS4999, BS5000, BS5514, IEC60034, EN61000-6, NEMA MG-1.22

### **DOCUMENTATION**

- Operation and maintenance manuals provided
- Wiring diagrams included

### **WARRANTY**

- All equipment carries full manufacturers warranty

## **OPTIONAL EQUIPMENT\***

### **ENGINE**

- Electronic governor
- Automatic lube oil make-up system

### **GENERATOR**

- Anti-condensation heater 110-120V AC

### **COOLING SYSTEM**

- Coolant heater 110-120V AC

### **MISCELLANEOUS ACCESSORIES**

- Additional operator's manual pack
- French or Spanish language labels

### **EXTENDED SERVICE COVERAGE**

- Extended service coverage available

\*Some options may not be available on all models.  
Not all options are listed.

**XQ20-2**  
**STANDBY**  
**PRIME**  
**60 Hz**

**20 kW**  
**18 kW**

**CATERPILLAR®**

## XQ20-2

Materials and specifications are subject to change without notice.

Generator Set Technical Data — 1800 rpm/60 Hz			Standby		Prime	
	kVA	kW	25	20	22.8	18
<b>Power Rating*</b>						
<b>Lubricating System</b>						
Type: Full Pressure						
Oil Filter: Spin-On, Full Flow						
Oil Cooler: Water Cooled						
Oil Type Required: API CF-4						
Total Oil Capacity						
Oil Pan	L	U.S. gal	10.6	2.8	10.6	2.8
	L	U.S. gal	8.9	2.35	8.9	2.35
<b>Fuel System</b>						
Fuel Filter Type: Replaceable Element						
Recommended Fuel: #2 Diesel						
Generator Set Fuel Consumption						
100% Load	L/hr	G/hr	7.1	1.9	5.2	1.6
75% Load	L/hr	G/hr	5.0	1.3	4.5	1.2
50% Load	L/hr	G/hr	3.7	1.0	3.4	0.9
Fuel Tank Capacity	L	U.S. gal	177	46.7	177	46.7
<b>Engine Electrical System</b>						
Voltage/Ground: 12/Negative						
Battery Charging Generator Ampere Rating	Amps		55		55	
<b>Cooling System</b>						
Water Pump Type: Centrifugal						
Radiator System Capacity Including Engine	L	U.S. Gal	6.96	1.83	6.96	1.83
Maximum Coolant Static Head	m H <sub>2</sub> O	ft H <sub>2</sub> O	3.1	10.2	3.1	10.2
Minimum Temperature to Engine	°C	°F	76	169	76	169
Temperature Rise Across Engine	°C	°F	6.6	11.9	6.0	10.8
Heat Rejected to Coolant at Rated Power	kW	Btu/min	19.9	1132	22.2	1263
Radiator Fan Load	kW	hp	0.4	0.54	0.4	0.54
<b>Air Requirements</b>						
Combustion Air Flow	m <sup>3</sup> /min	cfm	1.74	61	1.74	61
Maximum Air Cleaner Restriction	kPa	in H <sub>2</sub> O	6.4	25.6	6.4	25.6
Radiator Cooling Air	m <sup>3</sup> /min	cfm	33.7	1190	33.7	1190
Generator Cooling Air	m <sup>3</sup> /min	cfm	10.8	382	10.8	382
<b>Exhaust System</b>						
Exhaust Backpressure (Measured)	kPa	in Hg	1.3	5.4	1.7	6.8
Exhaust Flow at Rated kW	m <sup>3</sup> /min	cfm	4.76	168	4.34	153
Exhaust Temperature at Rated kW — Dry Exhaust	°C	°F	510	950	440	824
<b>Generator Set Noise Rating**</b>						
(With enclosure) at 7 m (23 ft)	dB(A)		65		65	

\*Three phase power rating

\*\*dBA levels are for guidance only

## SPECIFICATIONS



### GENERATOR

Voltage Regulation..... ± 0.5% 3 Phase at steady state  
from no load to full load  
Frequency ..... ± 0.8% for constant load from  
no load to 100% load  
Waveform Distortion ..... THD <1.8%, at no load  
Radio Interference ..... Compliance with EN61000-6  
Telephone Interference..... TIF <50, THF <2%  
Overspeed Limit ..... 2250 rpm  
Insulation..... Class H  
Temperature Rise..... Within Class H limits  
Available Voltages..... 480/277 Volt 3 phase,  
208/120 Volt 3 phase,  
240/120 Volt single phase  
Deration ..... Consult factory for available outputs  
Ratings ..... At 30° C (86° F), 152.4 m (500 ft),  
60% humidity, 0.8 pf (3-Phase), 1.0 pf (1-Phase)



### ENGINE

Manufacturer..... Caterpillar®  
Model..... C2.2  
Type..... 4-Cycle  
Aspiration ..... Natural  
Cylinder Configuration..... In-line 4  
Displacement — L (in<sup>3</sup>) ..... 2.2 (135)  
Bore — mm (in) ..... 84 (3.3)  
Stroke — mm (in) ..... 100 (3.9)  
Compression ratio..... 23.3  
Governor  
Type..... Mechanical  
Class..... Class A1  
Air cleaner type..... Dry, replaceable paper element,  
type with restriction indicator  
Piston speed — m/sec (ft/sec) ..... 6.0 (19.7)  
Engine speed — rpm..... 1800  
Maximum power at rated rpm — kW (hp)  
Standby ..... 24.3 (32.6)  
Prime ..... 22 (30)  
BMEP — kPa (psi)  
Standby ..... 731 (106)  
Prime ..... 658 (95.4)

**XQ20-2  
STANDBY  
PRIME  
60 Hz**

**20 kW  
18 kW**

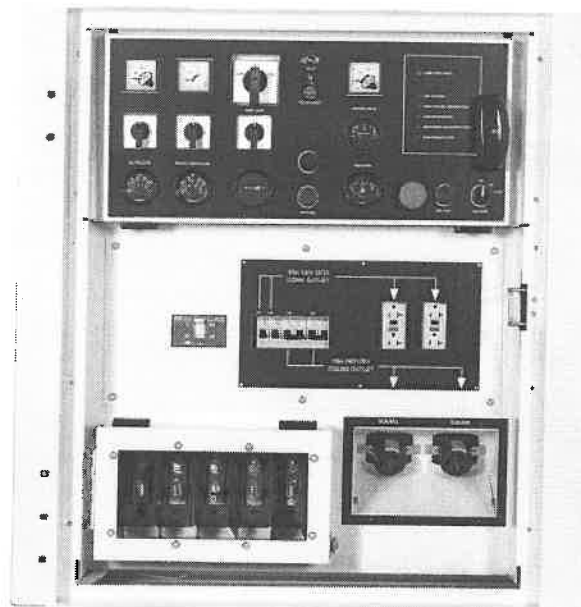
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## CONTROL PANEL

- NEMA 1 steel enclosure with hinged lockable door with viewing window.
- Manual run/off.
- Autostart standard.
- Separate pre-heat pushbutton.
- Red emergency stop pushbutton.
- Lamp test/reset pushbutton.
- AC instrumentation: 1-voltmeter, 1-ammeter, 1-frequency meter.
- Engine gauges for: oil pressure, coolant temperature, battery volts, fuel level.
- Fuel level display with momentary activation pushbutton.
- Battery charger, 5 Amp constant voltage, UL listed (optional).
- Hours run meter.
- Voltage adjust potentiometer.
- Cycle cranking with 3 adjustable time crank/rest periods.
- 1 — 7 Position voltmeter phase selector switch.
- 1 — 4 Position ammeter phase selector switch.
- Shutdowns: high coolant temperature/low coolant level, low oil pressure, overcrank, overspeed.
- Low fuel level/fuel tank leak alarm.
- Printed circuit board control logic.
- Panel light.

## DISTRIBUTION PANEL

- 1 — 3 Pole MCCB with solid neutral (4 Wire). UL/CSA listed with shunt trip.
- Integral trip unit for thermal and magnetic overload protection on MCCB.
- Main bus connection studs enclosed with hinged transparent cover for easy access and operator safety.
- Cover for bus studs includes safety lockout feature to keep unit from operating with door open.



- 2 — Single phase — California style Twistlocks, 50 Amps @ 208 Volt phase to phase, 120 Volt phase to neutral (adjustable to 240/139) or 240/120 single phase when operating in single phase voltage position.
- 2 — Single phase — GFCI Duplex receptacles, 20 Amps @ 120 Volts.\*\*\*
- Individual circuit breaker protection for receptacles. Also act as on/off switches.

\*\*\* Receptacles not for use with unit operating at 480/277V or 240/139V 3 phase.

Model	Length mm (in)	Width mm (in)	Height mm (in)	Weight	
				With Lube Oil & Coolant kg (lb)	With Fuel, Lube Oil & Coolant kg (lb)
XQ20-2	1980 (78)	820 (32.3)	1395 (55)	921 (2030)	1070 (2359)

## RATING DEFINITIONS

**Standby** — Applicable for supplying continuous electrical power (at variable load) in the event of a utility power failure. No overload is permitted on these ratings. The generator on the generator set is peak prime rated (as defined in ISO8528-3) at 86° F.

**Prime** — Applicable for supplying continuous electrical power (at variable load) in lieu of commercially purchased power. There is no limitation to the annual hours of operation and the generator set can supply 10% overload power for 1 hour in 12 hours.

Information contained in this publication may be considered confidential.

Discretion is recommended when distributing.

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Market: N. America

LEHE5041-03 (05-07)

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**X Q 3 0 P 4****OLYMPIAN™**

**STANDBY 30 kW**  
**PRIME 27 kW**

**60 Hz**

Voltage	Standby kW (kVA)	Prime kW (kVA)
208/120V	30 (37.5)	27 (33.8)
480/277V	30 (37.5)	27 (33.8)
240/120V	26.5 (26.5)	24 (24)

**FEATURES****EPA TIER II & CARB CERTIFIED  
FOR NON-ROAD MOBILE  
APPLICATIONS****SOUND ATTENUATED  
ENCLOSURE**

- The fully weatherproof enclosures incorporate internally mounted exhaust silencers and are of extremely rugged construction in order to withstand the rough handling common on many construction sites. They are designed on modular principles with many interchangeable components permitting on site repair.
- Highly corrosion resistant construction.
  - Body made from sheet steel components pre-treated with zinc phosphate prior to polyester powder coating at 392°F (200°C)
  - Black stainless steel padlockable latches.
  - Zinc die cast hinges/grab handles.

- Excellent access for maintenance.
  - Two large doors on each side. Two rear doors for distribution/control panel.
  - Front panel for air discharge box access.
  - Lube oil and cooling water drains piped to exterior of the enclosure.
- Security and safety.
  - Safety glass control panel viewing window in a lockable access door.
  - Emergency stop button on enclosure exterior.
  - Cooling fan and battery charging alternator fully guarded.
  - Fuel fill and battery can only be reached through lockable access doors.
- Transportability.
  - Tested and certified single point lifting eye.
  - Lifting points on baseframe.

**ROBUST DESIGN FOR RENTAL  
ENVIRONMENT**

- Packages designed to survive in rugged and maintenance starved environment.

**DISTRIBUTION PANEL**

- Switchable voltage from 480/277V 3 Phase to 240/139V 3 Phase (Can be dialled down to 208/120V 3 Phase) 240/120V Single Phase.\*

**REAR CUSTOMER ACCESS**

- Access through two doors.
- Separate control panel access.
- Separate connection console.
- Hinged door over main connectors.
- Emergency stop on panel.

**ENVIRONMENTALLY  
FRIENDLY DESIGN**

- EPA Tier II off-highway compliant engine.
- UL double walled fuel tank base with 24 hour minimum fuel supply.

**OPTIONS**

- AH1L — Anti-Condensation Heater 110-120 volt AC
- WHL — Coolant Heater 110-120 volt AC
- LOLR — Lube oil make-up system with REN automatic leveller
- GOVE5 — Electronic Governor
- PBC3UL — Battery Charger
- PSS11 — Raise/Lower controls on control panel
- LUBP2 — Lube oil drain pump

\* Refer to distribution panel specifications for details.

LEHF4785-01 (02-05)

**WHERE THE WORLD TURNS FOR POWER**



STANDBY 30 kW  
PRIME 27 kW  
60 Hz

OLYMPIAN™

## STANDARD FEATURES

### 1. ENGINE

Perkins Engine Co. heavy duty industrial EPA compliant diesel engine.

#### 1.1 Governor

Mechanical, compliant with BS5514, Class A1.

#### 1.2 Electrical System

12 Volt DC. Energized to run shutdown solenoid. Oil pressure and coolant temperature/level shutdown switches and gauge senders.

#### 1.3 Derates

Genset power derates will be required in accordance with engine manufacturers above 86°F (30°C).

### 2. COOLING RADIATOR

Radiator and cooling fan complete with protection guards, designed to cool the engine in ambient temperatures up to 120°F (49°C).

### 3. ENGINE FILTRATION SYSTEM

Cartridge type dry air filters with restriction indicator. Racor Fuel Filter in addition to engine filter. Cartridge type fuel filters and full flow lube oil filters.

All filters have replaceable elements.

### 4. EXHAUST SYSTEM

Critical Silencer with flexible connector.

All internal pipework lagged.

### 5. ELECTRICAL SYSTEM

12 Volt system with battery charging alternator, and starter motor on engine, battery rack mounted on the generator set baseframe and battery charger mounted on control panel.

Battery rack will accept a variety of battery sizes.

### 6. GENERATOR

Screen protected and drip-proof, self exciting, self-regulating brushless generator with fully interconnected damper windings, IC06 cooling system and sealed-for-life bearings. Switchable voltage output.

#### 6.1 Insulation System

The insulation system is Class H. Windings are impregnated in a triple dip thermo-setting moisture, oil and acid resisting polyester varnish. Heavy coat of anti-tracking varnish for additional protection against moisture or condensation.

#### 6.2 Electrical Characteristics

Electrical design in accordance with BS5000 Part 99, IEC60034-1, EN61000-6, NEMA MG-1.22.

#### 6.3 Automatic Voltage Regulator (AVR)

The fully sealed automatic voltage regulator maintains the voltage within the limits of  $\pm 0.5\%$  at steady state from no load to full load.

Nominal adjustment is by means of a trimmer incorporated in the AVR.

The panel door incorporates an additional voltage adjustment potentiometer.

#### 6.3.1 Permanent Magnet Generator

Providing 350% short circuit capabilities, enhanced Motor Starting and non-linear loading performance.

#### 6.4 Waveform Distortion, THF and TIF Factors

The total distortion of the voltage waveform with open circuit between phases or phase and neutral is in the order of 1.8. On a 3 phase balanced harmonic-free load the total distortion is 4%. Machines are designed to have a THF less than 2% and a TIF less than 50. A 2/3 pitch factor is standard on all stator windings.

#### 6.5 Radio Interference

Suppression is in line with the provisions of EN61000-6.

### 7. MOUNTING ARRANGEMENT

#### 7.1 Baseframe

The complete generator set is mounted on a heavy duty fabricated steel baseframe. The baseframe includes a UL listed closed top fuel tank and incorporates specially designed lifting points.

#### 7.2 Coupling

The engine and generator are directly coupled by means of an SAE flange so that there is no possibility of misalignment after prolonged use. The engine flywheel is flexibly coupled to the generator rotor and a full torsional analysis has been carried out to guarantee no harmful vibration will occur in the assembly.

#### 7.3 Anti-Vibration Mounting Pads

Captive anti-vibration pads are affixed between engine/generator feet and the baseframe ensuring complete vibration isolation of the rotating assemblies and enabling the machine to be placed on an uneven surface without detrimental effects.

#### 7.4 Safety Guards

The fan, fan drive and battery charging generator drive are fully guarded for personnel protection. Heat guards protect personnel from the exhaust pipe. All guards are to OSHA standards.

### 8. FUEL SYSTEM

Fuel feed and return lines to the engine are terminated at the baseframe mounted 24 hour extended capacity fuel tank. The entire fuel system is surrounded by a catchment area to prevent leakage. 3-way valves to allow connection of auxiliary fuel tank.

### 9. CONTROL SYSTEM

#### 9.1 Control Panel

Set mounted autostart panel in a vibration isolated NEMA 1 sheet steel enclosure with a hinged lockable door.

##### a. DC and AC Wiring Looms

DC and AC wiring looms utilizing industrial type multi-pin connectors to permit fast fault finding.

#### 9.2 Circuit Breaker,

3 Pole UL CSA listed molded case circuit breaker mounted on the generator set in a vibration isolated NEMA 1 distribution panel.

#### 9.3 Small power receptacles housed in a NEMA 1 distribution panel.

Receptacles accept industry standard male plugs. Each receptacle is protected by a miniature circuit breaker which also acts as an On/Off switch.

### 10. DOCUMENTATION

A full set of operation and maintenance manuals, circuit wiring diagrams, and instruction leaflets is provided.

### 11. SOUND ATTENUATED ENCLOSURES

A noise reducing enclosure surrounds the entire generator set. Combined with a critical engine silencer this provides an overall noise reduction from 65 to 68 dBA at 23 feet through the range.

### 12. FACTORY TESTS

The generator set is load tested before dispatch. All protective devices, control functions and site load conditions are simulated and the generator and its systems checked, proved and then passed for dispatch. A test certificate can be provided upon request.

### 13. EQUIPMENT FINISH

All sheet metal components including the enclosure and the base tank are fully degreased, phosphated and chromated for anti-corrosive protection prior to painting with polyester powder. The powder is cured at a temperature of 392°F (200°C) to ensure maximum scuff resistance and durability. All fasteners are electroplated. The engine and generator are thoroughly cleaned and finished in temperature controlled ovens with industrial high gloss polyurethane paint.

### 14. STANDARDS

The equipment meets the following standards: BS4999, BS5000, BS5514, IEC60034, EN61000-6, NEMA MG-1.22.

### 15. WARRANTY

Full manufacturer's warranty

**STANDBY 30 kW**  
**PRIME 27 kW**  
**60 Hz**

**OLYMPIAN™**

## XQ30P4

Materials and specifications are subject to change without notice.

Generator Set Technical Data — 1800 rpm/60 Hz		Standby	Prime
<b>Power Rating</b>	kW (kVA)	30 (37.5)	27 (33.8)
<b>Lubricating System</b> Type: full pressure Oil filter: spin-on, full flow Oil cooler: water cooled Oil type required: API CF-4 Total oil capacity Oil pan	U.S. Gal (L) U.S. Gal (L)	1.85 (7.0) 1.45 (5.5)	1.85 (7.0) 1.45 (5.5)
<b>Fuel System</b> Fuel filter type: replaceable element Recommended fuel: #2 diesel Generator set fuel consumption 100% load 75% load 50% load Fuel tank capacity	G/hr (L/hr) G/hr (L/hr) G/hr (L/hr) U.S. Gal (L)	2.3 (8.9) 1.8 (6.9) 1.4 (5.1) 149 (565)	2.1 (8.1) 1.7 (6.4) 1.3 (4.8) 149 (565)
<b>Engine Electrical System</b> Voltage/ground: 12/Negative Battery charging generator ampere rating	Amps	45	45
<b>Cooling System</b> Water pump type: centrifugal Radiator system capacity including engine Maximum coolant static head Minimum temperature to engine Temperature rise across engine Heat rejected to coolant at rated power Radiator fan load	U.S. Gal (L) Ft H <sub>2</sub> O (m H <sub>2</sub> O) °F (°C) °F (°C) Btu/min (kW) Hp (kW)	3.37 (12.8) 33.5 (10.2) 158 (70) 10.8 (6) 1246 (21.9) 1.34 (1.0)	3.37 (12.8) 33.5 (10.2) 158 (70) 10.8 (6) 1132 (19.9) 1.34 (1.0)
<b>Air Requirements</b> Combustion air flow Maximum air cleaner restriction Radiator cooling air Generator cooling air	Cfm (m³/min) In H <sub>2</sub> O (kPa) Cfm (m³/min) Cfm (m³/min)	128 (3.63) 26.5 (6.6) 4280 (121) 382 (10.8)	129 (3.64) 26.5 (6.6) 4280 (121) 382 (10.8)
<b>Exhaust System</b> Exhaust backpressure (maximum allowable) Exhaust flow at rated kW Exhaust temperature at rated kW — dry exhaust	In Hg (kPa) Cfm (m³/min) °F (°C)	4.43 (15.0) 338 (9.58) 1164 (629)	4.43 (15.0) 311 (8.80) 1040 (560)
<b>Generator Set Noise Rating*</b> [with enclosure at 23 feet (7 meters)]	dBA	65.8	65.4

\*dBA levels are for guidance only

## SPECIFICATIONS

### GENERATOR

Voltage regulation ..... ± 0.5% at steady state from no load to full load.  
Frequency ..... ± 0.25% for constant load from no load to 100% load  
Waveform distortion ..... THD <4%  
Radio interference ..... Compliance with EN61000-6  
Telephone interference ..... TIF <50, THF <2%  
Overspeed limit ..... 2250 rpm  
Insulation ..... Class H  
Temperature rise ..... Within Class H limits  
Available voltages: .. Switchable Voltage Output: 480/277 Volt, 240/139 Volt 3 Phase to 240/120 Volt Single Phase  
Deration ..... Consult factory for available outputs  
Ratings ..... At 86°F (30°C), 500 ft (152.4 m) 60% humidity, 0.8 pf

### ENGINE

Manufacturer ..... Perkins  
Model ..... 1104C-44NA  
Type ..... 4-Cycle  
Aspiration ..... Natural  
Cylinder configuration ..... In-line-4  
Displacement — cu. in. (L) ..... 269 (4.4)  
Bore — in (mm) ..... 4.13 (105)  
Stroke — in (mm) ..... 5.00 (127)  
Compression ratio ..... 19.3:1  
Governor  
Type ..... Mechanical  
Class ..... ISO 8528 G1 & G2  
Air cleaner type ..... Dry, replaceable paper element, type with restriction indicator  
Piston speed — ft/sec (m/sec) ..... 25.0 (7.62)  
Engine speed — rpm ..... 1800  
(Figs. are dep. on the Governor class) **G1** **G2**  
\*Maximum power at rated rpm — hp (kW)  
Standby ..... 65.6 (49) 72.6 (54.2)  
Prime ..... 58.2 (43.5) 64.9 (48.5)  
BMEP — psi (kPa)  
Standby ..... 108.6 (749) 118.8 (819)  
Prime ..... 92.5 (638) 108.2 (746)  
Regenerative power — kW ..... 10.7

STANDBY 30 kW  
PRIME 27 kW  
60 Hz

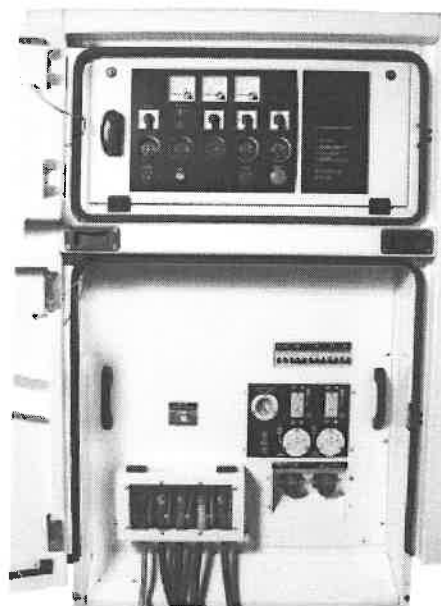
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### CONTROL PANEL — 4000 XQ

- NEMA 1 steel enclosure with hinged lockable door with viewing window.
- Manual Run/Off/Auto control switch.
- Separate Pre-Heat pushbutton.
- Red emergency stop pushbutton.
- Lamp test/reset pushbutton/activates fuel gauge.
- AC instrumentation: 1-voltmeter, 1-ammeter, 1-frequency meter.
- Engine gauges for: Oil pressure, Coolant Temperature, Battery Volts, Fuel Level.
- Fuel level display with momentary activation.
- Battery Charger, 3 Amp float/equalize, UL listed.
- Hours run meter.
- Voltage adjust potentiometer.
- Speed adjust potentiometer.
- Cycle cranking with 3 adjustable time crank/rest periods.
- 1 — 7 Position voltmeter phase selector switch.
- 1 — 4 Position ammeter phase selector switch.
- Shutdowns: High Coolant temperature/Low Coolant level, Low Oil pressure, Overcrank, Overspeed.
- Low Fuel level/Fuel tank leak, Low Battery volts alarms.
- Printed circuit board control logic.
- Panel Light.

### DISTRIBUTION PANEL

- NEMA 1 steel enclosure with hinged lockable door.
- 1 — 3 Pole MCCB's with solid neutral (4 Wire). UL/CSA listed with shunt trip.
- Integral trip unit for thermal and magnetic overload protection on MCCB's.
- Main bus connection studs enclosed with hinged transparent cover for easy access and operator safety.
- Common bus connection studs for 480/277 Volt, 208/120 Volt 3 phase and 240/120 Volt Single Phase.



- 2 — Single phase — California style Twistlocks, 50 Amps @ 208 Volt phase to phase, 120 Volt phase to neutral or 240 Volt phase to phase, 139 Volt phase to neutral.
- 2 — Single phase — GFCI Duplex receptacles, 20 Amps @ 120 Volts.\*
- 2 — Three phase — NEMA locking receptacles, 20 Amps @ 208/120 Volts.\*
- 1 — Single phase — NEMA locking inlet receptacle for 125 Volt, 30 Amp rated auxiliary supply.
- Individual circuit breaker protection for receptacles. Also act as on/off switches.
- Two wire remote start connection terminals.

\* Receptacles not for use with low voltage adjusted to 240 Volts.

Model	Length in (mm)	Width in (mm)	Height in (mm)	Weight	
				With Lube Oil & Coolant lbs (kg)	With Fuel, Lube Oil & Coolant lbs (kg)
XQ30P4	114.2 (2900)	44.5 (1130)	70.9 (1800)	3727 (1694)	4788 (2176)

### RATING DEFINITIONS

**Standby** — Applicable for supplying continuous electrical power (at variable load) in the event of a utility power failure. No overload is permitted on these ratings. The generator on the generator set is peak prime rated (as defined in ISO8528-3) at 86°F.

**Prime** — Applicable for supplying continuous electrical power (at variable load) in lieu of commercially purchased power. There is no limitation to the annual hours of operation and the generator set can supply 10% overload power for 1 hour in 12 hours.

www.CAT-ElectricPower.com

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Materials and specifications are subject to change without notice.  
The International System of Units (SI) is used in this publication.